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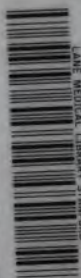
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# Ichthyol

**Its History  
Properties  
Therapeutics**



# ICHTHYOL

ITS HISTORY, PROPERTIES,  
AND THERAPEUTICS



MERCK & CO.  
= NEW YORK

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# ICHTHYOL

## Introductory

Ichthyol, an organic sulphur preparation,\* was first brought into commerce in 1882 by Rudolf Schröter, the founder of the Ichthyol Company of Hamburg, under the trade-marked name "Ichthyol," and "Sulpho-Ichthyolicum" or "Sulpho-Ichthyolate." As a remedy, the preparation was originally introduced in skin diseases by the eminent dermatologist, Dr. P. G. Unna, of Hamburg, in 1882. Since then, however, its application has been widely extended, and to-day there is no remedy more universally prescribed for a wide variety of indications.

"There is no remedy of more universal application than Ichthyol," observes the *Medical Summary* (Nov., 1905). "We frequently hear the expression, 'It cures everything from corns to consumption,' as facetiously applied to and stigmatizing the vaunted expanse of some pretentious and flagrant nostrum. But here, in sober fact, we have a remedy that actually spans this tremendous range of therapeutic possibility and efficiency. Our confirmatory evidence runs from personal experience with intractable soft corns, so painful and stubborn of relief, to the word of the resident physician of a most noted hospital for consumptives that 'they use it almost without limit, both internally and externally.'"

\* The word "Ichthyol" standing alone refers to the Ammonium Ichthyol. Variants of the word cover the entire series of products made by the Ichthyol Company from the famous deposits near Seefeld, in the Tyrol:

Ichthyol-Ammonium	="Ichthyol"
Ichthyol-Sodium	="Sulphoichthyolate" Sodium
Ichthyol-Zinc	="Sulphoichthyolate" Zinc
Ichthyol-Piperazin	="Ichthyolidin"
Ichthyol-Silver	="Ichthargan"
Ichthyol-Paraffin	="Ichtholan"
Ichthyol-Formaldehyde	="Ichthoform"

Prof. Horatio C. Wood, of Philadelphia, in his well-known work on "Therapeutics: Its Principles and Practice," remarked on page 504 of the eleventh edition (1900), that "if one-half of what has been said of it is true, it is a remedy of extraordinary power and value."

Prof. Hobart A. Hare, of Jefferson Medical College, in his "Practical Therapeutics," twelfth edition, 1907, says: "Ichthyol is without doubt one of the most remarkable substances introduced for medicinal purposes within the last twenty years, both because of its curious origin and its therapeutic value in a large variety of ailments. In the author's hands it has proved most efficacious in the treatment of the inflamed areas in acute articular rheumatism."

## Production

From Zirl, a village situated on the Inn, several miles west of Innsbruck, a road leads northward between the Karwendel and Wetterstein Alps to Mittenwald and Partenkirchen. Upon this road, at an altitude of 1000 meters and on Austrian soil, may be found the hamlet Seefeld. In the immediate vicinity of this hamlet, the crude oil, which serves the Ichthyol Company of Hamburg as the starting-point for the various Ichthyol preparations, is obtained. The mineral employed is a specific bituminous stone, known in the vernacular as "oil-stone" or "stink-stone."

The veins are 20 to 100 cm. thick, and enveloped by strata showing very perfect impressions of animals, particularly of fish, thus giving the mineral considerable paleontological importance.\*

The stone is worked by boring small tunnels into the mountain-side for a distance of 200-300 meters. After being broken up, the less valuable pieces are thrown out, while what remains is still further comminuted until the pieces are no larger than the palm of the hand. From this stone, by

\* It is not even remotely to be considered that the fossil remains have anything whatever to do with the therapeutic properties of the finished "Ichthyol" products. It is now fairly well settled that the therapeutic virtues of these remedies depend upon the organically combined sulphur contained within them. But the presence of these impressions of extinct fishes in the mineral adjacent to the veins which are worked and solely used as raw material served the imagination of the originator to construct the fanciful name "Ichthy-ol" (Ichthys-oleion) for his products.

the application of artificial heat, is obtained the characteristic sulphuretted oil known as "stink-oil," "Thierschen-oil" or "Tyrsus-oil," the exact nature and composition of which has not yet been determined.

Formerly, the crude oil was obtained exclusively on a small scale by the neighboring peasants. The industry is hundreds of years old, and the raw oil was peddled extensively in the surrounding villages, where its properties were well known. The crude oil, from which Ichthyol is made, is not found on the market.

According to a fable, two giants, Haymon and Thiersch, quarreled, until Haymon, incensed at the continued mutilation of his cloister by Thiersch, overtook the latter in a forest and disabled him. Thiersch, fatally wounded, fled, and his track, covered with blood, was changed into a healing mineral. This fable will explain the terms used above and also the introduction and use of the oil. (Compare also the historical notice on "Thuersen-oil" in the *Pharm. Post*, 1901, p. 11, and 1902, p. 309, and Loebisch, "Die neueren Arzneimittel," 1888.)

The foregoing items struck R. Schröter with special interest. He fancied that there should be found some means to purify the oil and to make it soluble in water in order that its application might be extended, and he finally succeeded as is known. He secured the territory where the raw material seemed to exist (*Monatshefte f. prakt. Dermatologie*, Dec., 1882), and called the product of his manufacture "Ichthyol." In 1884, he founded the Ichthyol Company in Hamburg in which his heirs are still interested.

The stones being of somewhat different character and composition, partly brownish, partly black-colored and of different specific weight, the oil, of course, is of somewhat different composition too. The Ichthyol Company being in possession of the pits which contain the different stones, therefore makes a careful selection among the different qualities according to an adopted system. The crude oil thus excels by its homogeneity and high content of particularly combined sulphur, which forms the basic material for the several "Ichthyol" products.

The Ammonium-Ichthyol (Ammonium ICHTHYOL-sulphonate) is obtained by treating this oil with concentrated sulphuric acid, neutralizing with ammonia, and purifying.

## Chemistry

These "Ichthyol" compounds are often spoken of as "salts." As the several Ichthyol combinations are produced by neutralizing with an ammonium, sodium, or some other, base, this term "salts" has frequently been applied to these products, although they are not "salts" in a strictly chemical sense. Thus by means of ether it is possible to separate from Ichthyol neutral oils insoluble in water, and by means of alcohol, saline substances soluble in water. The fact is, that the Ichthyol compounds, like albumin, for instance, are chemical bodies as yet undefined. The method of production makes clear why this should be so. The Seefeld stone, from which Ichthyol is derived, is subjected to dry distillation, producing a complex mixture of oils, the exact composition of which is still unknown in spite of many scientific researches. These oils are sulphonated by the proper methods, and the resulting acidly-reacting group of bodies is neutralized as stated.

A chemical formula for Ichthyol,  $C_{28}H_{36}S_2O_6(NH_4)_2(?)$ , has been current in scientific literature for some time, but such a complex substance cannot be truly represented by any real chemical formula. It is proper, therefore, when this reputed formula is published, that its doubtful character should be indicated by a question-mark, as was indeed done by the investigators who originally gave it as their approximate estimate. (See New Edition of Hager's *Pharmazeutische Praxis*, Editors: Prof. Hartwich, Prof. Bernhard Fischer; and *Real Enzyklopädie der gesamten Pharmazie*, 1905, Editors: Prof. Jos. Moeller and Prof. Hermann Thoms.)

What Professor Loebisch states (*Die neueren Arzneimittel*, 1888), still holds true:

"Ichthyol is a remedial agent not yet sufficiently characterized chemically, but whose chief ingredients are distillation products derived from bituminous shales found near Seefeld (Tyrol)."

*The New and Non-Official Remedies*, issued by the Council on Pharmacy and Chemistry of the American Medical Association (1912, p. 119), says:

"Ichthyol is an aqueous solution the solids of which consist largely of the ammonium salts of sulphonic acids which latter have been prepared by sulphonating the tar-like distillate obtained from bituminous shales found near Seefeld in the Tyrol which contain the fossil remains of fishes."

It also gives the following description and tests:

"Ichthyol is a reddish-brown to brown-black, syrupy liquid having a characteristic empyreumatic odor and burning taste.

"It should be completely soluble in water; incompletely soluble in alcohol or ether, but nearly soluble in a mixture of equal volumes of alcohol and ether; also soluble in a mixture of equal volumes of alcohol, water and ether. It is miscible with glycerin, oils and fats.

"The aqueous solution of Ichthyol (1 : 10) has a faintly acid reaction upon blue litmus paper.

"The aqueous solution of Ichthyol (1 : 10) yields a greenish-black, resin-like precipitate upon the addition of hydrochloric acid. This precipitate is nearly insoluble in ether; it is partially soluble in alcohol; soluble in water, but if dissolved in the latter solvent it may again be precipitated from solution by the addition of hydrochloric acid.

"With barium chloride test solution the aqueous solution of Ichthyol (1 : 10) gives a brownish-black precipitate which is insoluble in dilute hydrochloric acid.

"If the aqueous solution (1 : 10) be boiled with potassium hydroxide test solution, ammonia should be evolved.

"Ichthyol is incompatible with acid and saline solutions, fixed alkalies, their carbonates and iodides, alkaloidal salts and mercuric chloride.

"If 1 Gm. of Ichthyol be ignited it should leave no weighable residue.

"If 10 Gm. of Ichthyol be diluted with 90 Cc. of water, the mixture placed in a glass-stoppered cylinder, and allowed to remain undisturbed for twenty-four hours, no deposit should form.

"If dried at 100° C. (212° F.) Ichthyol should not lose more than 47.0 per cent. of its weight (absence of an undue amount of water).

"If from 5 to 6 Gm. of Ichthyol be weighed into a flask, 25 Cc. of potassium hydroxide test solution and 100 Cc. of water be added, the mixture distilled until no more ammonia passes over, the distillate collected in 15 Cc. of normal sulphuric acid to which 1 drop of methyl orange test solution has been added, and the excess of acid then titrated with tenth-normal potassium hydroxide, the amount of normal sulphuric acid consumed should correspond to from 2.9 to 3.4 per cent. of total ammonia (NH<sub>3</sub>).

"If from 5 to 6 Gm. of Ichthyol be weighed into a beaker, diluted with 50 Cc. of water, 10 Cc. of a 10 per cent. solution of albumin added, followed by 5 portions of 5 Cc. each of diluted hydrochloric acid, shaking

after each addition, the mixture made up to a volume of 500 Cc. and filtered through a fry filter, and if 200 Cc. of the filtrate be heated to boiling, 10 Cc. of barium chloride test solution added, the mixture allowed to stand for twenty-four hours, the precipitate of barium sulphate collected, heated and weighed in the usual way, the weight of barium sulphate obtained should correspond to from 5.7 to 6.2 per cent. of ammonium sulphate.

"If from 0.5 to 1 Gm. of Ichthyol be weighed into a Kjeldahl flask, diluted with 30 Cc. of water, 5 Gm. of potassium chlorate added, followed by 30 Cc. of nitric acid, the mixture evaporated to about 5 Cc., 25 Cc. of hydrochloric acid added, this solution evaporated to about 5 Cc., 25 Cc. of hydrochloric acid again added, this solution evaporated to about 5 Cc., 100 Cc. of water added, the solution heated to boiling, 10 Cc. of barium chloride test solution added, the mixture allowed to stand for twenty-four hours, the precipitate of barium sulphate collected, heated and weighed in the usual way, the weight of barium sulphate should correspond to at least 10% of total sulphur.

"If the ammonia contained in the ammonium sulphate as previously determined in Ichthyol be calculated, and the result subtracted from the 'total ammonia' as previously determined, the remainder should represent the ammonia combined with the organic-sulphonic acids. If this value be multiplied by 1.88 the result should represent the sulphur present in the sulphonic acids in an oxidized state, i.e., the 'sulphonic sulphur.'

"If the sulphur contained in the ammonium sulphate as previously determined in Ichthyol be calculated, and the result subtracted from the 'total sulphur' as previously determined, the remainder should represent the sulphur present in the organic-sulphonic acids contained in the substance.

"If the 'sulphonic' sulphur in Ichthyol as previously calculated be subtracted from the sulphur in the organic-sulphonic acids as previously calculated, the remainder should correspond to at least 5.5 per cent. of 'organic' ('sulphidic') sulphur."

The exact composition and nature of Ichthyol is still doubtful, and this, together with the fact that Ichthyol is trademarked, are the chief considerations why Ichthyol was not taken up in the new edition of the U. S. P. Being a product obtained by the dry distillation of a bituminous mineral found in a particular locality, it would most naturally have peculiarities of its own that would distinguish the article from any sulphonated distillate of bituminous rock found elsewhere, and so no uniformity of product could be guaranteed unless the source of material and the processes of manufacture were constant.

Ichthyol (so-called "Ammonium *Ichthyol*-sulphonate" or "Sulpho-*ichthyolate*") is, therefore, as nearly as can be stated, a chemical combination of sulphonated sulphur-con-

taining hydrocarbons and the "base". It is a thick, reddish-brown liquid, and possesses a bituminous odor and taste. It is soluble in water and in a mixture of equal volumes of alcohol, ether, and water, and is miscible with oils and glycerin, but is partly soluble in strong alcohol or concentrated ether. It contains a large percentage of sulphur in a form which is at once soluble and readily assimilable. After a chemical examination of this substance, Prof. E. Baumann, and Dr. G. Schotten, of Berlin, declare (*Monatsh. für prakt. Dermat.*, Vol. II, 1883, p. 257) that the sulphur it contains is present partly in a condition similar to that in organic sulphides and mercaptans, and partly in some oxidized form.

Cushny (*Text Book of Pharmacology and Therapeutics*, 1903) says:—"The constitution of Ichthyol is still doubtful, and it is even undecided whether it is not really a mixture of a number of bodies. It contains a high percentage of sulphur, which seems to be only in part in the form of sulphones, in part in that of mercaptans and sulphides."

Ichthyol is incompatible with acids, alkali carbonates or hydroxides, and alkaloidal salts, potassium iodide, hydrastis and its preparations, mercuric chloride, and resorcinol. Acids precipitate a dark resinous mass; alkali hydroxides or carbonates decompose it; and with alkaloids or their salts, insoluble compounds are formed which are of much firmer consistency than Ichthyol and far less soluble.

Sulpho-ichthyolate (Sodium) is obtained from the sulphonated sulphur-containing oil by neutralization with sodium hydroxide. It forms a brownish-black, viscid mass soluble with turbidity in water, and also partially soluble in alcohol and ether; also partially soluble in a mixture of equal parts of alcohol, ether, and water. By exsiccation, the preparation may be converted into a brown, rather hygroscopic powder which is specially adapted for exhibition in pill form.

Sulpho-ichthyolate (Zinc) is obtained in the same manner by neutralizing with zinc carbonate, and is very similar to Sulpho-ichthyolate (Sodium).



## Nomenclature—Substitutes

The Ichthyol Company has educated the trade to use the word "Ichthyol" alone without further qualification, to denote their Ammonium compound.\* Makers of certain substitute products have called their preparations Schistinol (ammonium sulpho-schistinate), Bituminol (ammonium sulpho-bituminolicum), Thyolin (sulpho-thyolicum), Ichthynat (ammonium ichthynatum), Isarol (ammonium isarolate), Pisciol (ammonium sulpho-pisciolicum), Ichtium, Sau-rolo (ammonium sulpho-saurolicum), etc., according to the fanciful name adopted by each maker for his product.

Numerous scientific investigations have fully established the chemical non-identity of the various imitations with Ichthyol, a fact which has also received frequent judicial notice (see *Chemist and Druggist*, Dec. 18, 1909; *The Midland Druggist and Pharmaceutical Review*, April, 1910; the decisions re The Ichthyol Co. vs. Luedy & Co., Burgdorf, Switzerland, before the Appellations und Kassationshof of the Canton Berne on Apr. 1, 1905, on appeal; the decisions re The Ichthyol Co. vs. Chemisches Laboratorium Friedrichstadt Hoeckert and Michalowsky, Berlin, before the Königliche Landgericht I, Oct. 7, 1907, and the Königlich Preussische Kammergericht in Berlin, Jan. 28, 1909, on appeal; the decision re The Ichthyol Co. vs. Ratti & Co., Gordano, Italy, before the Tribunal Civile e Penale di Voghera, Mch. 18, 1903, and the Corte d'Appello di Casale, June 24, 1903, on appeal; and lastly The Ichthyol Co. vs. Luigi Veneroni of Milan, Italy, before the Tribunale Civile e Penale di Milano, Dec. 2, 1908, and the Corte d'Appello di Milano, March 23, 1911, on appeal). It was held unlawful for the defendants to sell their products as chemically identical with Ichthyol, and under the name "Ichthyol" either alone, or in combination with other words, as for instance, Ammonium Sulpho-*Ichthyol*-ate, these names being

\* The Ammonium compound is the article always understood when simply "Ichthyol" is spoken of, and all references in literature relate to this product. A large number of imitations of Ichthyol are to be found on the market under various misleading names. These substitutes, however, vary from Ichthyol, and from each other, in important physical and chemical characteristics and therapeutic properties, and are derived from sources other than the described Seefeld mineral yielding the true preparation upon which, without exception, all clinical reports have been based.

trademarks, the industrial property of The Ichthyol Co. of Hamburg, and all the references in literature and the trade generally referring, as is well known, to the special product of The Ichthyol Co. of Hamburg.

Regarding these many imitations and substitutes, it is interesting to note that competent experimenters declare them to be totally inefficient. Thus Dr. Johann Hirschcron, of Vienna (*Deut. Aerzte-Zeitung*, Jan., 1907, No. 1), says he has tried them all, and has found them to be neither as effective nor as reliable as Ichthyol; furthermore, the various substitutes appear to differ among themselves in action as they did in composition, hence he was in every case compelled to abandon them and resort again to Ichthyol.

Dr. Hugo Goldman in an article in the *Deut. Aerzte-Zeitung*, No. 16, Aug. 15, 1906, also reports his experiences with ichthyol substitutes. He employed a number of substitutes, just as he would have used Ichthyol, in five cases of chronic metritis, applying tampons impregnated with 10 per cent. glycerin solutions of the substitutes. He found, however, that the action of the substitutes was quite different from that of Ichthyol. The application was soon followed by a burning sensation and a pain that increased so in severity with each application, that after the third application the patients refused to allow further treatment with the remedies. Recourse was then had to Ichthyol, which reduced the pain and swelling caused by the substitutes, and effected a cure. Similar results were observed in burns and in erysipelas. The pains, which under Ichthyol gradually disappear, invariably became more severe when substitutes were applied; in erysipelas the tension became greater, and around the burns there developed a redness with swelling of the collateral lymphatic glands. The author is a firm believer in Ichthyol, his daily use of the remedy in his hospital practice in Vienna, and particularly in the gynecological division, having fully convinced him of its merits.

Dr. Chesnel, in a paper on Ichthyol in Gynecology (*La Quinzaine Thérapeutique*, 1908, Aug. 10, p. 278), says:

"The high therapeutic value of Ichthyol is due to its high sulphur content, the sulphur being present in a special form of combination. The therapeutic results obtained depend upon the conditions of manufacture, and hence as the physician has no means of making an analysis of the product which he orders, it is necessary to prescribe only a brand which has been proved to give satisfaction. Simplest prudence alone would impose this line of conduct; in fact, while pure Ichthyol is a perfectly harmless remedy, certain substitutes are capable of giving rise to disagreeable phenomena, such as irritation, phlyctena, and even vesicular eruptions. The employment of Ichthyol in gynecology depends upon the properties it possesses as a non-irritant antiphlogistic and bactericide."

Dr. Houssian (*Annales de Polyclinique Centrale de Bruxelles*, Feb., 1906) states that great care should be taken that the true Ichthyol is used, as within recent years a number of so-called synthetic "Ichthyols" have been put on the market under various names or "synonyms," which are nothing more nor less than sulfonated petroleum of varying origin. None of these substances has stood the test of time, and they have at times been found to be particularly irritating, hence the author is emphatic in insisting on the use of the product that is derived from the bituminous shale from Seefeld, in the Tyrol, the true Ichthyol as originally introduced by Unna, and made by the Ichthyol Co., of Hamburg.

Professor Bourget, Director of the Medical Clinic, University of Lausanne, says in his book "*Typhlite, Pérityphlite, Appendicite*," p. 31:

"The use of Ichthyol is being extended more and more. Unfortunately, substitutes are beginning to be marketed. Professor Stryzowsky, the Director of our University Laboratory, has just reported on the introduction of a preparation which he has analyzed, and which is claimed to be Ichthyol, but which differs materially from the genuine article prepared and supplied by Cordes Hermann & Co., of Hamburg."

The *Chemiker Zeitung*, No. 43, 1906, reports:

"None of the so-called Ichthyol substitutes has proved to be of the same value as the genuine article supplied by the Ichthyol Co. of Hamburg. This latter preparation is meant when Ichthyol is spoken of, all the investigations and publications having been made with this preparation alone."

Professor Unna, the introducer and promoter of Ichthyol, in a letter to Professor Rabow, dated June 11th, 1906, in reply to the question what his opinion was regarding the

substitutes, states that the trials he had made with these had convinced him that none of them can replace Ichthyol; that these substitutes, because of their belonging to the group of sulphur-hydrocarbons, have a certain resemblance to Ichthyol physically, but that chemically and pharmacologically they differ from the genuine article of the Ichthyol Company of Hamburg in consequence of their being of quite different composition, and that, further, these substitutes differ also essentially among themselves.

Dr. W. T. Marrs, of Peoria Heights, Ill. (Merck's Archives, Aug., 1907), also insists that no substitute or "just-as-good" preparation should take the place of Ichthyol if we would be sure of results.

## Physiological Action of Ichthyol

It has been shown experimentally that Ichthyol possesses the following valuable physiological properties:

1. It is able to penetrate the unbroken skin.
2. It is a powerful vasomotor constrictor on mucous surfaces.
3. It is readily oxidizable and therefore easily abstracts oxygen from the tissues.
4. It promotes the metabolism with which sulphur is concerned.

The first of these properties is no doubt due to the fact that Ichthyol is miscible with both water and oils, since it has been shown that other bodies possessing this quality likewise possess this power. When its solutions are applied to the unbroken skin the evidences of its penetration are found in a largely increased percentage of sulphur in the urine.

Dr. Sutton, of Kansas City, Mo., working in Dr. Unna's Clinic in Hamburg, made a series of observations, of more than general interest, on the absorbability of remedies through the skin (*Monatshefte für praktische Dermatologie*, Oct. 15, 1906). In all, some 200 experiments were performed with some fifty or more different menstrua. The

experimenter's conclusions show that Ichthyol in combination with olive oil constitutes one of the best absorption media for securing local action.

By virtue of its constricting action on the vascular system, Ichthyol is found to cause a rapid disappearance of hyperemia and of the pain of congestion.

Prof. Roberts Bartholow, of Philadelphia, in his "*Materia Medica and Therapeutics*," 1902, p. 350, states that Ichthyol

"increases assimilation and hinders retrograde metamorphosis, whereby nutrition is improved and the body weight brought up to the normal level."

Professor Zuelzer, of Berlin (*Monatsh. für prakt. Dermat.*, 1886, No. 12), tells of a number of experiments in which the body weight steadily increased under the use of Ichthyol, and adds:

"this increase of weight and improvement of the general health support my opinion that we possess in Ichthyol a remedy which is very likely to favor the formation of albuminoids in the system, and to retard their disintegration."

Dr. O. Helmers (*Virchow's Archives*, 1894, No. 1) experimented upon himself with Ichthyol and found that it restricted albuminoid disintegration, favored assimilation, supplied fully one-third of its sulphur to the circulation, and was finally excreted by the urine.

## Bactericidal Action of Ichthyol

Professor Roberts Bartholow, in his "*Materia Medica and Therapeutics*," 1903, p. 350, informs us that Ichthyol is "a decided antiseptic, and is fatal to pathogenic organisms."

Professor Samuel O. L. Potter, of San Francisco, in his "*Materia Medica*," 1906, p. 47, states that its medicinal qualities depend much upon its antiseptic powers.

Dr. S. Klein (*Therap. Gazette*, Vol. III, p. 862) declares that:

"Ichthyol undoubtedly exerts a marked influence on the development of the micrococcus of erysipelas in the skin, which may be attributable either

to the reducing action which this remedy exerts on the tissues, or to a direct action exerted on the pathogenic micro-organisms, or to both of these causes."

Dr. Julius Fessler, of the University of Munich, found (*Bull. of Pharm.*, 1891, Vol. V., p. 72), after many experiments, that 1 part of Ichthyol in 4000 parts of peptone solution rendered the latter unsuitable for the development of the erysipelas bacillus; and a similar effect, though less pronounced, was also observed upon the staphylococcus aureus.

Dr. Rudolf Abel, assistant to Prof. F. Loeffler at the University of Griefswald, Prussia, says (*Centrabl. f. Bacter.*, 1893, No. 13) that "the bacillus of diphtheria is killed by dilute Ichthyol solutions, in fresh cultures."

Dr. A. B. Griffiths reports (*Med. Press*, 1896, Vol. LXII, p. 257) the following results of experiments regarding its bactericidal properties.

1. The micrococcus of gonorrhea was destroyed by undiluted Ichthyol in fifty seconds. A five-per-cent. solution of Ichthyol destroyed the coccus in fourteen minutes, and a one-per-cent. solution in sixty-five minutes.

2. The micrococcus of erysipelas was destroyed by undiluted Ichthyol in two minutes. A five-per-cent. solution of Ichthyol destroyed the coccus in thirty-five minutes, and a one-per-cent. solution in three and a quarter hours. The Ichthyol solutions appeared to thoroughly disorganize the microbial growths.

3. The bacillus of influenza was destroyed by undiluted Ichthyol in three minutes. A one-per-cent. solution destroyed it in four hours.

Prof. A. Neisser, of Breslau, stated at the International Dermatological Congress at Vienna in 1892, that "one-per-cent. solutions of Ichthyol destroy gonococci."

## Therapeutics of Ichthyol

The first use to which Ichthyol was put by Unna and those associated with him in his early experiments with this substance, was as an application in skin diseases. There it won its laurels, and there it continues to stand the test

of time and experience. It is safe to say that few remedies are now more extensively used by dermatologists, and it has received unstinted praise by all who have tried it in the most diverse forms of skin diseases. It has been particularly praised in **erysipelas**, **eczema**, **acne**, and **urticaria**. So warm, indeed, has the praise been that some of our conservative authors have, on general principles, pronounced it extravagant. In order that the reader may be able to judge for himself in this matter, and to see how extensive the hold is which it has taken upon the profession, in this as well as in other directions, we present a few of the eulogistic statements made concerning it by our leading textbooks and by well-known American and foreign dermatologists in our leading journals.

Butler's "*Materia Medica, Therapeutics and Pharmacology*" (1906, p. 304) informs us that "it is particularly useful in **erythematous eczema**, **erysipelas**, **lupus erythematosus**, **irritable acne**, and certain forms of **acne rosacea**." Anders' "*Practice of Medicine*" (1899, p. 178) informs us that Ichthyol is extensively used in the Pennsylvania Hospital for the treatment of **erysipelas**, and that "Zelewsky found Ichthyol efficacious in every form of **erysipelas**, it being superior to other remedies." Osler's "*Practice of Medicine*" (1899, p. 160), in describing the treatment of **erysipelas**, states that "in local applications Ichthyol is at present much used." "*Allbutt's System of Medicine*" (1899, Vol. IX, p. 636) informs us that in **herpes zoster**, Ichthyol, either mixed with water or in the form of an ointment, "is an extremely satisfactory preparation." The *Medical Annual* (1897, p. 519) states that Dr. Eberson declares "Ichthyol is one of the few specific remedies; it is a specific in **erysipelas**, it is a mighty weapon in **erythema**, **eczema**, **rosacea**, **intertrigo**, etc." The "*Annual of the Universal Medical Sciences*" (1892, p. A86) says "an excellent contribution to the use of this important drug is published by T. Cranstoun Charles (*Lancet* [London], September 26, 1891). A large number of cases suffering from the following disorders were treated with success: **Burns**, **erythemata**, **herpes zoster**, **eczema**, **acne**, **sycosis menti**,

psoriasis, pityriasis capitis, pruritus senilis, boils and carbuncles, erysipelas, rheumatism, gout, neuralgias, contusions and catarrhs. The drug was employed locally and internally." Martindale and Westcott's "*Extra Pharmacopæia*" (London, 1898) credits the "*British Medical Journal*" with saying that Ichthyol is "valuable externally for treating **acne** and **eczema**," and in "successful use in **erysipelas** and **boils**." The "*International Medical Annual*" (1898, p. 210) informs us that Klotz, at the meeting of the American Dermatological Association in 1897, gave a most favorable account of Ichthyol.

Dr. L. Duncan Bulkley, of New York, speaks (*Jour. Amer. Med. Assoc.*, 1889, No. 10) in high terms of Ichthyol in ulcers of the leg and in moist eczema. Dr. Malcom Morris, the well-known London dermatologist, surgeon of the Skin Department of St. Mary's Hospital, and editor of the *Practitioner*, in the annual address to the Reading Pathological Society, in 1898, praised the internal as well as the external use of Ichthyol in various forms of skin diseases. He says, among other things, that "Ichthyol in doses of two or three grains gives relief in **pruritus**; in **urticaria** it is generally most useful in gradually increasing doses. It is of service in **lupus erythematosus** by reducing hyperemia. Its peculiar power of controlling local circulatory disorders makes it particularly useful in **rosacea**, marked improvement becoming manifest within a few days of the commencement of the administration." In chronic skin diseases characterized by atony and induration of the deeper layers of the skin, it is of marked benefit, says Allbright's *Office Practitioner*, May, 1906.

Prof. Hobart A. Hare, in his work "*Practical Therapeutics*" (1905, p. 278), states that:

"Ichthyol is also the best external treatment of **erysipelas** that we have. . . . Ichthyol is also a very useful drug in the treatment of **chronic skin diseases** associated with atony and induration of the deeper layers of the skin, such as **acne**, **eczema**, and even **lupus** and **keloid** in their chronic stages. . . . In **frost-bites**, **chilblains**, and in **burns** it is of service, and Agnew has recommended it highly when rubbed into **lymphatic enlargements**. Ichthyol has proved remarkably efficacious in removing **peritoneal** and other **pelvic exudations** when used as an ointment or in a vaginal



suppository. For acute **sprains** and for the removal of the swelling following such injuries, its influence is extraordinary if it be well rubbed into the part affected. In severe cases of **cracked nipples** with much induration, Ichthyol will prove of value . . . It is also a very useful remedy for the treatment of **fetid ozena**."

In the "*Transactions of the New York State Medical Association*" (1897, p. 449), Dr. E. H. Squibb, of Brooklyn, says that "practically all the reports agree to the superior properties of Ichthyol as an antiseptic, analgesic, antiphlogistic and bactericide. Its use has been continued in the treatment of **pulmonary tuberculosis** with favorable results. It has recently been quite successfully used painted over joints enlarged by **rheumatism** and **gout**. In **scarlet fever**, **measles**, and **diphtheria** it has its advocates."

Prof. Horatio C. Wood, in his "*Therapeutics: Its Principles and Practice*" (1900, p. 504), states that:

"In **lumbago** and other forms of **muscular rheumatism**, in **rheumatic** or **gouty joint diseases**, indeed, in almost every form of **subacute** or **chronic gout**, according to Schweninger, Lorenz and others, a few rubbings with pure Ichthyol or a 50 per cent. ointment will produce an immediate and remarkable effect."

Professor Potter, in his "*Materia Medica, Pharmacy, and Therapeutics*" (1906, p. 477), says that upon **exudations** "it has a remarkable power when given internally at the same time as applied externally, promoting their reabsorption and promptly alleviating the pain. For these purposes it has been highly praised in **gynecology** and even in **pleurisy**. It has done excellent service in **erysipelas**, and in ulcers of the leg, locally applied in ointment form with lanolin, or pure; and internally in various affections of the digestive and intestinal tract; also in **phthisis**, **syphilis**, and **leprosy**."

Dr. Robert Bell, physician to the Glasgow Hospital for Women, in a paper in the *Edinburgh Medical Journal* for April, 1896, and quoted in "*Braithwaite's Retrospect of Medicine*" (Vol. CXIV, p. 406), refers to the use of Ichthyol in diseases of the uterine appendages as follows:

"To me, the effects of Ichthyol in the treatment of these at one time intractable diseases are perfectly marvelous; were I to give instances of but a very small percentage of the number of cases which I have seen beneficially affected and cured by the simple method of applying Ichthyol tampons, I feel assured that operations of the serious nature necessary for the removal of diseased appendages would rapidly decrease."

According to the *Medical Annual* (1897, p. 519), Dr. Eberson has come to the conclusion already mentioned that:

"Ichthyol is one of the few specific remedies. It is a specific in **erysipelas**. It is a mighty weapon in **erythema**, **eczema**, **rosacea**, **intertrigo**, **blennorrhea** and its complications, **chronic nephritis**, and in the inflammatory affections of the uterus."

Dr. A. Seibert, Professor of Pediatrics at the New York Polyclinic, who from 1894 to 1900 treated fifty-six cases of **scarlet fever** with inunctions of Ichthyol, reports (*Jahrbuch f. Kinderheilk. u. Phys. Erzieh.*, Vol. LI, 1900, p. 308):

"The cutaneous swelling subsides soon after the first thorough inunction; the itching is immediately relieved, and disappears after several applications; rhagades and secondary phlegmonous and erysipelatous infiltrations are by this means entirely prevented; the temperature falls, in all cases where no complications exist, from one to three degrees (F.) in a few hours, and the restlessness and insomnia, due to the cutaneous inflammation, are relieved."

Dr. Strisover has the following to say regarding the use of Ichthyol in **smallpox** and **measles** (*Vratsch*, Vol. XIX, p. 235):

"On trying it upon a severe case of variola, one of the most remarkable features was that the itching, which had so far resisted all possible treatment, entirely disappeared after the first or second application. In two other severe cases, the temperature became normal on the second day of the treatment, the itching disappeared completely, appetite and sleep returned, and on the eighth day the patients were convalescent."

These remarkable results decided him to try it in measles during an epidemic. It was used upon a large number of patients in age from six months to eighteen years, and in every single case the results, he declares, were highly satisfactory.

Dr. Weissmann, of Lindenfels (*Reichs-Medizinal-Anzeiger*, 1908, No. 6), speaks of 437 cases of most varied affections, including **vulvar pruritus** and **furunculosis**, **metritis**, **endometritis**, **parametritis**, **anal pruritus** and **fissures**, **prostatitis**, **synovitis** of the tendon sheaths, **herpes**, **erysipelas**, **laryngeal diphtheria**, **distortions** and **bruises** of the joints, bones, and soft tissues; in **neuralgias**, **polyarthrititis**, **insect bites**, **acne**, **eczema**, **frost-bites**, **periphlebitis**, **gonorrheic conjunctivitis**, etc. He states that in all these cases

Ichthyol afforded him the best service, the analgesic effect and power to cause resorption being particularly in evidence.

Dr. William Odell, Hon. Physician to the Western Hospital for Consumption, Torquay, in a paper read at the National Tuberculosis Conference, London, Feb. 17, 1909, reported on his use of Ichthyol in 165 cases of **pulmonary tuberculosis**, of which 123 were treated with Ichthyol. The results obtained lead the author to say that:

"There is no doubt whatever in my mind that Ichthyol tends to diminish the amount of coughing and expectoration, and, therefore, to minimize the liability to hemorrhage. There is no doubt also that Ichthyol has the effect of reducing temperature, and keeping it within a very limited range both as to the evening rise and the corresponding morning fall. I believe it has a beneficial effect upon the night sweats."

In a more recent paper on "Further Evidence of the Value of the Treatment of Pulmonary Tuberculosis with Ichthyol," read at the International Congress against Tuberculosis, in Rome, April, 1912, the same author cites the results obtained in sixty-six additional cases treated by him. These results bear ample confirmative testimony regarding the excellent Ichthyol effect, and particularly emphasize the fact that brightness and cheerfulness is one of the invariable effects of the treatment by Ichthyol, while at the same time there is a more or less decided gain in weight, and the patients acquire a healthy, ruddy complexion.

When one reads all these statements from the highest medical authorities in the United States, Great Britain, Germany, and other countries, it is not to be wondered at that the *International Medical Annual* (1894, p. 256) says:

"The first thing to note is the continued chorus of praise in favor of Ichthyol."

The number of diseases that have been favorably affected by the use of Ichthyol may appear surprising at first sight; but it has been pointed out by Dr. P. G. Unna, of Hamburg, and by Professor von Nussbaum, that in every one of these diseases some common pathological basis exists, and that, therefore, its remarkable effects when traced to their cause in the physical and physiological properties of

the substance are just such as might be expected of it. Professor von Nussbaum further declares that:

"All the diseases and ailments in which this remedy is efficacious depend upon hyperemia and capillary ectasia; and his experience has proved that Ichthyol, when brought into contact with the dilated capillaries locally, causes them to contract; and that, taken internally, it benefits only those asthmatic affections, digestive disturbances, pelvic neuralgias, and sciaticas, which are associated with anomalies of circulation and capillary dilatation."

## Methods of Administering and Using Ichthyol

Many methods have been adopted both for the internal and external application of Ichthyol. It is impossible to go over all the various devices resorted to in order to overcome the rather unpleasant taste of the remedy, or to adapt it to special forms of disease. The various formulas will probably be of service to practitioners in enlightening them upon the approved methods of the experienced. In order to adapt the treatment to new conditions and new complications, changes will necessarily have to be made by each physician to suit his own cases.

Internally Ichthyol is given mostly in simple solution, in an equal part of water or peppermint water; sometimes in the form of pills or capsules. Some authorities advise the use of chocolate-coated pills; others, keratin-coated pills; while still others give it in uncoated pills with licorice or other such excipient.

[When it is desired to give Ichthyol in pill form, it is advisable to use Sulpho-ichthyolate (Sodium) because the consistency of the latter better adapts it for the purpose.]

One author says:

"So far as the exhibition of Ichthyol is concerned, this is best accomplished in the form of a mixture with an equal volume of water, of which one or two drops are prescribed to be taken three times daily in a little water. The dose is then gradually increased every three days by one drop, until ten drops are being taken thrice daily, but never on an empty stomach. Should any gastric pressure or burning sensation be felt, it is an indication that either the Ichthyol has been taken insufficiently diluted, which is

most frequent, or that the maximum dose for the patient is being exceeded. Of course, weaker dilutions of Ichthyol may be used, whereby the risk of too large doses is much lessened."

Externally, Ichthyol is employed in ointments, pastes, dusting powders, or lotions; in vaginal, uterine, or rectal suppositories, and as urethral bougies.

For deodorizing Ichthyol for external use, the addition of one part each of oil of bergamot and oil of eucalyptus to fifty parts of Ichthyol has been recommended. Before the application of the Ichthyol, except in eczema, it is usual to wash the affected parts each time with warm water and soap, and then to dry gently; and after inunction or painting, the parts are best covered with cotton-wool or flannel and gutta-percha tissue.

**Ichthyol stains** may readily be removed by boiling the fabric in soap and water, or by washing with soft soap or soap spirit.

## Limitations

Every physician knows that no therapeutic agent is free from some limitation to its usefulness. In this respect Ichthyol is no exception, notwithstanding the fact that those who have experimented with it or used it in their daily practice have all been profuse in its praise. Every medicinal substance is bound to fail when used in cases in which it is only apparently indicated, but is in fact, from some unknown cause, really contra-indicated. There are patients upon whom the best known and most thoroughly tried remedies produce unexpected or untoward effects, or fail completely to produce the good results that the physician has every reason to expect. In the presence of idiosyncrasy all calculations fail. It is quite surprising that so few such cases have been reported regarding Ichthyol. Here and there the remedy has been tried and found wanting, and men who have under other circumstances declared that their success with it was extraordinary, have occasionally found it to fail. A case of this kind is illustrated by

the experience of Dr. Leon Canova, as reported in the *Practitioner* of March, 1896, and quoted in the *Medical Annual* (1897, p. 266). This author informs us that irrigation with Ichthyol, by virtue of the analgesic, antiphlogistic, and antiseptic properties of the drug, is indicated in the treatment of gonorrhea, in preference to any other substance; yet he says "in certain cases it fails, as do all other measures."

Dr. Robert Bell, physician to the Glasgow Hospital for Women, after enumerating a number of gynecological affections in which he had used it successfully, states (*Edinburgh Med. Jour.*, 1896, p. 921) that in a very small percentage of cases Ichthyol tampons had produced unpleasant bladder symptoms. In calling attention to the limitations of the remedy, he says that cystic, malignant fibroids, and tuberculous affections of the ovaries, are, of course, beyond the range of its curative power.

Probably the greatest drawback to the use of Ichthyol externally is its strong odor, and the fact that it stains the linen brown. The odor, as already pointed out, can be largely overcome by the use of fragrant essential oils; and the stains are not permanent, but can readily be removed by boiling in soap and water.

In the internal use of Ichthyol, considerable complaint has been made of the taste as well as the odor; in some sensitive individuals slight nausea and vomiting have occurred; in rare instances diarrhea has been provoked; and in others disagreeable eructations have been produced. Here the ingenuity of the pharmacist has been called into service. The use of capsules, pills, and mixtures flavored with oil of peppermint and other essential oils have proved of good service. Dr. Heinrich Fraenkel, of Lemberg, Germany, says (*Ther. Wochenschr.*, Vol. IV, p. 357) that

"in spite of the disagreeable odor and taste, the patients were so well satisfied with the result produced that they eagerly demanded the medicine."

Prof. Zuelzer, of Berlin, in a report on a series of experiments upon human beings, in which 1 to 1½ fl. dr. of Ichthyol were given daily in divided doses, states (*Monatsh. f. prakt. Dermat.*, 1886, No. 12) that:

"No permanent aversion to it (Ichthyol) was manifested by any of the subjects; on the contrary, when the remedy has been taken for two or three days, most of them showed great inclination to take it further. The eructations at first caused soon passed off."

The peculiar valuable properties possessed by Ichthyol render the remedy exceedingly useful in many ailments other than those already enumerated. Physicians who have found that it served them well in one form of inflammation have tried it in others. When they discovered that it eased pain and hastened absorption of exudates in one class of cases, they naturally gave it a trial in other cases of the same kind that came under observation. In this way the applicability of Ichthyol has been extended over a large field of diseases and injuries—not that Ichthyol is a cure-all, but because it is a remedy having certain distinct physiological qualities of which the intelligent prescriber quickly saw he could avail himself with a fair chance of being successful.

## Ichthyol in Cutaneous Diseases

It is a noteworthy fact that the diagnosis of cutaneous disorders offers as a rule considerable difficulty to the general practicing physician. Quite commensurate with this difficulty in diagnosis is that of the therapeutics of cutaneous medicine. Having arrived at the correct diagnosis, the choice of the proper remedy is often a matter of great perplexity. The cutaneous surface, acting at the same time as a secreting, excreting, and respiratory organ, extremely sensitive, delicately adjusted, and containing in its structure a vast number of blood vessels and nerves, requires the same care in diseases as does any hidden viscus, and only such therapy as takes cognizance of this, and is applied with full knowledge of the existing pathologic process, can be successful.

In Ichthyol, introduced into cutaneous medicine in 1882 by Prof. P. G. Unna, the therapy of skin diseases has been enriched by a drug of great value in the treatment of a number of conditions.

In dilute solutions, Ichthyol has been found to be an excellent antipruritic and sedative; used pure and in concentrated solution its action is keratoplastic, bactericidal, and vasoconstricting. When it is remembered in how many cutaneous disorders the elementary pathological process is a vasodilation, leading later to all grades of inflammatory reaction, it may readily be seen how the various above-mentioned properties of Ichthyol render it a valuable drug in combating cutaneous disease.

## Acne

Acne is second only to eczema in importance among skin diseases. In its common form, acne vulgaris, it is a constant source of annoyance, worry, and anxiety to all who suffer from it. At the very period of life when there is the greatest desire to possess smooth and fair complexions, and when the life-happiness of many depends upon youthful charms, the disfiguring blotches of acne are a source of real anguish. Any remedy that will successfully and quickly



remove these blemishes must inevitably be highly prized. To accomplish the object sought, a remedy is required that will check suppuration by destroying the bacteria thereof, and that will at the same time improve assimilation.

For a long time, Ichthyol, used both internally and externally, has been of great service in the treatment of **acne**, as will be seen from the appended reports, which are but a few of many published:

Prof. P. G. Unna (*Dermat. Studien*, Hamburg, 1886), to whom we are indebted for introducing Ichthyol into dermatology, is quoted as saying:

"Ichthyol is the internal remedy *par excellence* in **acne**. It is useful in all forms, the pustular as well as the papular. Under its constant use many other complaints are cured; for example, the severest kind of **gastro-intestinal catarrh**. It is also the best supporting measure which we can combine with the external treatment of **acne**."

In this report Unna also points out the value of Ichthyol as an external application where **acne** has formed deep scars on the face, and he declares that "it leads to almost complete disappearance of the scars."

Butler's *Materia Medica, Therapeutics, and Pharmacology*, 1906, p. 304, says:

"It is particularly useful in irritable **acne** and certain forms of **acne rosacea**."

In Dr. E. Mourron's theses, quoted by Unna (*Jour. d. Malad. Cut. et Syphil.*), we find the following said:

"The employment of Ichthyol in **acne** is further recommended by Dr. L. Brocq in keloid **acne**, as well as in resistant forms of **acne** with considerable and deep cutaneous infiltrations. In these the Ichthyol is used either as an application or in the form of a plaster. Ichthyol has also given good results in **acne** in cases treated by Prof. H. Leloir, of Lille; Prof. Carl Kopp, of Munich; Dr. Morgan Dockrell; Prof. Ernst Schwimmer, of Budapest; and Dr. T. Cranstoun Charles; also at the Dermatological Clinic at Montpelier."

"Valuable externally for treating **acne**."—(Martindale's "*Extra Pharmacopœia*," 1898, p. 268).

In Dr. Jessner's report in *Aerztl. Prakt.*, Vol. X, p. 686, it is stated that:

"Ichthyol is an excellent means of introducing sulphur into the system, and it exerts a remarkably beneficial action (in **acne**), the digestion being decidedly improved. Even weak stomachs bear it well; and although it at first gives rise to unpleasant eructations, these soon cease."

The same author, in his *Dermat. Vorträge f. Praktiker*, 1899, Heft 2, p. 18, says:

"It is remarkable how often patients recuperate during the use of Ichthyol (in **acne**) and how well they feel after it. Digestion is decidedly improved. The Ichthyol, if taken in the proper manner, is borne remarkably well even by weak stomachs."

Dr. Morgan Dockrell (*Med. Press and Circ.*, Dec. 7, 1892) says of Ichthyol:

"Specially in **acne cachecticorum** will good results be obtained, two cases under my care taking, with marked benefit, six minims thrice daily. Steam the face for half an hour, using a vaporizer, then wash in warm water with the superfatted Ichthyol in collodion or bassorin. In the majority of cases it will be better to do this at night, washing the application off in the morning. This method will be found useful in checking the development of fresh papules and also in removing troublesome indurated papules. In extensive scarring in **acne**, the application of the combination of salicylic acid, 10 per cent., Ichthyol, 30 per cent., in petrolatum, is attended with good results. In all stages (of **acne rosacea**) it is most useful, not only in modifying the increased vascularity, but also in relieving the dyspepsia, which plays such an important part as a concomitant symptom."

In a report to the *Jour. des Malad. Cut. et Syphil.*, 1893, Mch.-May, Dr. Chatelain stated that Ichthyol diminishes the induration in **acne**, clears the follicular orifices, and softens the skin. He prescribes it to be given internally in doses of 5 drops twice or thrice daily, or morning and evening 15 drops of a solution of 1 or 2:5. Externally he applies overnight an Ichthyol paste or a 10-per cent. solution; besides, washing with an Ichthyol soap and warm water is ordered. The author states he has obtained cures by this means in less than two months. The internal use of Ichthyol is frequently continued in doses of 15 minims (1 Cc.) daily for several months after the cure is effected. In certain cases a varnish made as follows is used:

Ichthyol.....	40 parts
Starch.....	40 parts
Conc. solut. Albumin.....	1-2 parts
Water.....	to make 100 parts

Dr. Geo. T. Elliott (*Med. News*, Nov. 17, 1900) also speaks highly of the use of Ichthyol in 4 to 50 per cent. aqueous solutions in **acne**, especially in cases where there is much pustulation. In 50-per cent. solution the author says it frequently aborts the lesions.

To relieve redness of the nose Dr. Kühn (*Pharm. Post.*, XXXVIII, p. 779) recommends the internal administration of Ichthyol in doses of 1 to 2 Gm. per day for a long period, together with the external application of the remedy in aqueous solution at night-time, or in the form of an ointment consisting of zinc ointment 20 Gm., powdered starch 5 Gm., and sulphur 2 Gm.

### Formulas for Acne

*Acne*  
 Ichthyol..... 4 fl. dr.  
 Water..... 4 fl. dr.

Rub in before retiring; wash off in morning with warm soap-water. During the day use weak solution of corrosive sublimate.

Ichthyol..... 40 parts  
 Starch..... 40 parts  
 Conc. Solut. Albumin..... 1-2 parts  
 Water..... to make 100 parts

Ichthyol..... 1 fl. dr.  
 Ether..... 1 fl. oz.  
 Brandy..... 7 fl. dr.

Apply evenings with brush. Wash off in morning.

Ichthyol..... 1 fl. dr.  
 Salicylic Acid Merck..... 1 dr.  
 Soft Soap..... 40 grn.  
 Lanum..... to make 1 oz.

Apply evenings.

Ichthyol..... 1 to 2 fl. dr.  
 Soft Soap..... 1 to 2 fl. dr.  
 Lanum..... 2 dr.

To be rubbed in at night and washed off in morning with warm soap and water. During the day a soothing application, like cold-cream or lanum, is to be used. (In severe forms of acne, if indicated, 1 to 2 dr. ammoniated mercury may be added to the above formula.)

Ichthyol..... 1 fl. dr.  
 Zinc Oxide Merck..... 2 dr.  
 Starch..... 2 dr.  
 Lard..... 4 dr.

Apply evenings after squeezing out pustules and washing with a 1:1,000 corrosive sublimate solution.

Ichthyol..... 20 min.  
 Salicylic Acid Merck..... 5 grn.  
 Precip. Sulphur..... 30 grn.  
 Starch..... 1½ dr.  
 Zinc Oxide Merck..... 1½ dr.  
 Petrolatum..... 4 dr.

Face paste.

Ichthyol..... 2 fl. dr.  
 Lanum..... 2 dr.  
 Petrolatum..... 2 dr.

Rub in at night and wash off in the morning with warm soap-water.

Ichthyol..... 2 fl. dr.  
 Soft Soap..... 4 dr.

Rub in at night until absorbed; wash off in morning with warm soap water. (If too much irritation of the skin results, suspend ointment and use five- to ten-per cent. Ichthyol-petrolatum ointment instead.)

Ichthyol..... 5 fl. dr.  
 Flour..... 2 dr.  
 Lanum..... 1 dr.  
 Expr. Oil Almond..... 1 fl. dr.  
 Water..... 1 fl. dr.  
 Mercury Bichloride..... ½ grn.

Make a paste. Apply at night.

Ichthyol..... 1 fl. dr.  
 Bismuth Subnitrate Merck..... 1 dr.  
 Ammoniated Mercury..... 1 dr.  
 Petrolatum..... 10 dr.

Apply freely before retiring. (In large pustules.)

### *Acne Rosacea*

Ichthyol..... 20 min.  
 Precip. Sulphur..... 30 grn.  
 Zinc Oxide Merck..... 1½ dr.  
 Corn Starch..... 1½ dr.  
 Lanum..... to make 1 oz.

Rub in night and morning.

## Formulas for Acne—(Continued)

Ichthyol..... 1 fl. oz.  
 Oil Eucalyptus..... 10 min.  
 Oil Bergamot..... 5 min.

Paint on at night; wash off in the morning with soap and warm water; then apply dusting-powder.

Ichthyol..... 15 min.  
 Benzoated Zinc Ointment.. 1 oz.  
 Precipitated Sulphur..... 15 grn.

Armenian Bole..... to color  
 (Ten-per cent. Ichthyol soap is recommended for long-continued use.)

Ichthyol..... 4 fl. dr.  
 Peppermint Water..... 1 fl. oz.

Begin with two or three drops once or twice daily; increase gradually until one hundred drops daily are reached.

(N.B.—Any of the applications recommended for simple acne are also considered valuable in acne rosacea, provided the local treatment is accompanied by the internal administration of Ichthyol.)

## Angiomata

Congenital **angiomata** are either formed by arterial vessels or they consist of small veins. The former have a tendency to grow rapidly, while the latter remain stationary. To remove the **arterial nevi**, simple but continuous compression sometimes suffices. This is best accomplished, according to Unna (*Therap. Monatsh.*, XIV, No. 8), by painting with a mixture of Ichthyol, 1 part, and collodion, 9 parts. The nevus is painted with this fluid two or three times daily. After a few days a thick crust is formed and, after it falls off spontaneously, the procedure is repeated and continued for some time after to prevent recurrence.

## Dermatitis

Dr. Leo Leistikow says (*Archiv f. Schiffs u. Trop. Hyg.*, 1898) that, among the cutaneous affections which are more generally met with aboard ship and in the tropics, **acute traumatic dermatitis**, and **dermatitis venenata**, are also successfully treated with Ichthyol.

According to Dr. L. D. Bulkley, of New York (*Amer. Med.-Surg. Bull.*, Vol. XL., p. 29):

"Ichthyol certainly stands very high in importance among the newer additions to therapeutics in dermatology, as it is also valuable in other branches of medicine, and all are undoubtedly familiar with its use. As an antipruritic it is often of great service. Added to ointments, in a strength of from 6 to 10 per cent., it is very valuable in **eczema**, and may be used in even quite

acute conditions. In **dermatitis herpetiformis** an aqueous solution, 5, 10, or even 20 per cent., will often give more relief than any other local remedy. When the skin is too dry it can be used in almost the same strength in oil with much advantage."

The London *Lancet*, No. 3, 961, p. 268, states that Ichthyol has been recommended by Dr. Kedarnath Das in **dermatitis exfoliativa neonatorum** (Ritter's disease). The author says that the Ichthyol, being a parasiticide and keratoplastic, is peculiarly indicated in this disease.

In severe forms of **dermatitis venenata**, whether caused by *Rhus toxicodendron* or any other irritative plant or drug, the inflammation often reaches such severe grades that it suggests erysipelas. Ichthyol here rapidly controls the inflammation and prevents the spread of the disease, and is very easily applied, says Dr. Hermann G. Klotz (*Therap. Gaz.*, Feb. 15, 1910). Most other remedies spoken of in the text-books are used in the form of moist dressings, but where large areas are involved these can hardly be used, or else are very troublesome, since the dressing has to be changed so often. The use of Ichthyol is much simpler, requires no further dressing, and a new application is not necessary oftener than every six to eight hours.

### Formulas for Dermatitis

Ichthyol.....	1 fl. dr.	Ichthyol.....	1-2-4 parts
Lanum.....	4 dr.	Water.....	to make 20 parts
Petrolatum.....	4 dr.		
Cumarin.....	1 grn.	Ichthyol.....	2 parts
Apply twice daily, after previous washing with warm water and evacuation of pustules by scarification.		Olive Oil.....	8 parts

### Ecthyma

In ecthyma, and in fact most pustular dermatoses of the extremities, Ichthyol applied locally in the form of wet dressings in 5 to 10 per cent. solution will be found very useful in removing the dried crusts, healing the superficial resulting ulcerations, and, by inhibiting the growth of micro-organisms, preventing the occurrence of fresh lesions.

Dr. René Lautembacher, Assistant at the Paris Hospitals (*Revue Internationale de Médecine et Chirurgie*, No. 2, 1912) recommends Ichthyol in **ecthyma**. He states the following:

"The local treatment consists in the application of bandages moistened with a at first 5-per cent., later with a 10-per cent., Ichthyol solution, the bandages being made to cover the entire inflamed zone. The bandages are then covered with a layer of cotton, which in turn, is covered with a layer of waxed paper (not waxed paper first and then cotton, as this may give rise to a troublesome maceration of the skin); the whole is then fastened down with a linen or gauze bandage. Under this treatment, the bandages being renewed every day, but only by the physician, the inflammation and lymphangitic processes decline, and the pustules dry. Later on, when the diffuse inflammation has disappeared and only the ecthymatous ulcerations remain, bandages wet with the 10-per cent. Ichthyol solution are continued, and zinc ointment is applied to the entire skin surrounding the ulcerations. Care must also be taken to observe whether any new pustules form, and if they do, to destroy them by the application of the thermo-cautery or with the point of a scarifier, as it frequently happens that ecthyma is not cured because the patients reinfect themselves by scratching the efflorescences. As soon as the ulcerations have been thoroughly cleansed, their cicatrization is effected by the application of suitable remedies such as dermatol, etc."

## Eczema

To the family physician and dermatologist, eczema is certainly one of the most frequent of all the skin diseases he is called upon to treat. Its forms are protean, but, with careful treatment a satisfactory degree of success can generally be expected. Fully 30 per cent. of all cases of skin diseases have been held to be eczematous in character.

Eczema, when classified by its anatomical characteristics, can be placed under four heads: (1) Papular, (2) vesicular, (3) erythematous, and (4) pustular; but these can be readily subdivided into a large number of fairly distinct forms. The chief symptoms and features requiring special attention in the treatment are itching, oozing, pustulation, crusting, scaling, thickening of the skin, and cracks or fissures. Astringent and antiseptic substances in great numbers have been used with considerable success; but on the introduction of Ichthyol a decided and important gain was made. This gain has brought forth many expressions of satisfaction

from the profession, particularly as regards eczema of the eyes, lips, nostrils, external genitals, and such parts of the skin as border on the mucous membranes. From among the many references we append a few; from their tone, the high standing of the authors, and the character of the books and journals from which they are quoted, the reader can readily draw his own conclusions:

Unna, in *Dermat. Studien*, Hamburg, 1886, quoted by Prof. J. V. Shoemaker, in his *Materia Medica and Therapeutics*, 1893, Vol. II, p. 707, says:

"Ichthyol, internally and externally, does brilliantly; the **eczema** disappears rapidly, the appetite returns, and the bodily weight increases."

Dr. von Sehlen (*Monatsch. f. prakt. Dermat.*, 1895, Vol. XIX, p. 1), reports that he

"Found Ichthyol superior to any other remedy in this kind of **eczema** (eczema bordering mucous membranes)."

In a large number of his cases he used an Ichthyol and zinc ointment, which he declares was followed almost invariably by "a speedy cure."

"A remedy of remarkable value and power" is the comment of Dr. A. Mueller of Victoria, N. S. W., on the use of Ichthyol in **eczema**, after profusely praising its effects.—(*Australasian Med. Gaz.* 1890, No. 108.)

Dr. P. Schmitz (*Amer. Med.-Surg. Bull.*, Vol. VIII, p. 919) reports that in treating eczema he formerly used an ointment of salicylic acid, oxide of zinc, and starch with petroleum, but that "he never had such success with it as since the addition of Ichthyol to the same formula."

"Its value fully established as a local measure in **erysipelas**, **eczema**, etc.," says Dr. S. Wolfe, physician to the Philadelphia and Samaritan Hospitals, (in *Merck's Archives*, Vol. II, p. 9.)

Prof. von Nussbaum (*Monatsch. f. prakt. Dermat.*, 1886, No. 11) has the following to say:

"I saw most surprising effects from the use of Ichthyol in **eczematous ulceration** accompanied by great itching. The numerous remedies used by dermatologists had been tried for months without success. Under Ichthyol the itching abated rapidly the first night, and the ulcers healed within a short time."

Dr. J. R. McLean (*Brit. Med. Journ.*, Mch. 9, 1889) says that:

"In **simple erythematous eczema**, before the vesicles develop, I have found Ichthyol a superior remedy to any other. If the hands or face are affected, they should be washed as seldom as possible, and then only with warm soft water to which has been added a little oatmeal or glycerin. After washing and careful drying, I apply a little glycerin (1 fl.dr. in 1 fl.oz. of distilled water). I then apply Ichthyol solution, varying in strength as regards the position and stage of the disease. In **simple erythema** a solution of 1 fl.dr. in 1 fl.oz. of distilled water is a proper strength, painted on with a camel's-hair brush once in four hours. If the itching is very severe, the solution may be applied, say, once in every two hours, for three applications; it will very soon allay the itching.

"In **scaly, dry eczema**, an ointment is preferable, as it softens the epithelium better; say 1 fl.dr. of Ichthyol to 1 oz. petrolatum, or with a little lanolin (lanum) added.

"In **weeping eczema** if the Ichthyol solution is applied at the early stage of the 'weeping,' before there is much raw surface formed, it will control any further exudation; repeating in three or four hours until the part dries up; but if there is much tender surface it is better to apply the ointment for the first 24 hours or so, as then the solution causes some smarting."

Dr. Morgan Dockrell (*Med. Press and Circ.*, Dec. 7, 1892) says that:

"Internally, Ichthyol is of the greatest value in all inflammations. Useful in **recurrent vesicular eczema**, especially when it occurs on the back of the hands. It is advisable to continue a gradually increasing dose, up to 24 minims daily, for a month or six weeks after the eruption has disappeared.

"Local **erythematous eczema**, when occurring on face, will be rapidly improving by using an application of Ichthyol, 20 per cent., with oxide of zinc, 10 per cent., in bassorin. In the axilla, when associated with hyperidrosis, it will be found beneficial to paint the area with pure Ichthyol, and apply an ointment of Ichthyol, 30 per cent., with resorcinol, 2 per cent.

"In **vesicular eczema**, before vesicles rupture, touch vesicles with pure Ichthyol, and then paint over affected surface with a 40-per cent. Ichthyol varnish, removing it at the end of forty-eight hours, and apply Ichthyol-gelatin, 30-per cent. This will gradually rub off in a week, and surface will be found well. The use of a 10-per cent. Ichthyol soap for washing purposes seems beneficial in checking the recurrence. At least, this is the experience of four patients who suffered from this variety of eczema on the backs of the hands, and who have remained free from it, one patient for eighteen months. After vesicles rupture, Ichthyol must be applied in the weak form, and is best combined with zinc oxide. The gelatin form, 5 per cent. to 10 per cent., is the most convenient method, and the right strength to commence with. When the itching ceases, the strength may be increased."

Dr. Gould (*Amer. Year-Book of Med. and Surg.*, 1897, p. 1035) reports that:

"The efficacy of Ichthyol is probably due in part to the large percentage of sulphur it contains. It may be used in solution with water in various pro-



portions, as a thick varnish, mixed with albumin or starch, or in ointment form. On moist patches an emulsion with water of the strength of 1:10 or 1:20 parts is often of service, especially when followed by a soothing ointment or paste."

Prof. Hobart A. Hare, in his *Practical Therapeutics*, 1905, p. 278, says that:

"Ichthyol is without doubt one of the most remarkable substances used for medicinal purposes which has appeared in the last decade. In skin diseases it has been most highly recommended on both sides of the Atlantic, and is employed in the form of Ichthyol ointment in **chronic eczema**, **acne**, **urticaria**, and even in **lupus** and **keloids**. In almost all chronic skin affections it is of the greatest value, and the writer has seen it exert the most favorable influence upon **erysipelas**, both in hospitals and his private practice."

The **eczema** often seen around an ulcer may be treated with an Ichthyol ointment having the following composition, states Dr. S. Jessner (*Merck's Archives*, Jan., 1902, p. 9):

Ichthyol.....	16 min.
Zinc Oxide.....	3 dr.
Starch.....	3 dr.
Petrolatum.....	to make 2 oz.

Dr. William S. Gottheil, of New York (*Merck's Archives*, July, 1904), employs, in the treatment of **eczema**, a zinc ointment containing 1 to 2 per cent. Ichthyol. In the later dry stage a little salicylic acid (1 to 2 per cent.) may be added. The ointment is spread evenly as thick as the back of a table knife on strips of muslin or sheet lint cut to fit the inflamed areas, and should be applied under a mask, being renewed at least two or three times daily.

Dr. T. Henry Whiting, of Elgin, Ill. (*Med. Brief*), states that the following ointment is valuable in all cases of **eczema** where there is a very scaly eruption, especially of the head or beard:

Ichthyol.....	1 oz.
Sulphuric Acid.....	2 drops
White Petrolatum.....	3 oz.
Apply with cotton.	

In **eczema**, Ichthyol actually affects the anatomical process and will be curative provided the strength of the Ichthyol varnish used is adjusted to the conditions, reports Dr. Hermann G. Klotz (*Therap. Gaz.*, Feb. 15, 1910). It is most suitable for **erythematous eczema**, but the vesicular and papular subacute forms will also be influenced favorably.

The results of Ichthyol treatment are less brilliant in **chronic eczema**, where it is desired to cause absorption of the infiltrated areas. The treatment is, however, satisfactory if the condition is temporarily rendered acute by energetic inunction with soap or by the application of caustic potash in varying strength, particularly if the Ichthyol varnish is combined with salicylic soap plaster.

Dr. P. Smolitcheff (*Prakt. Vrach*, Nos. 29 and 30, 1903) has found the following combination especially useful in the treatment of eczema:

Tincture Iodine.....	1 oz.
Camphorated Oil.....	$\frac{1}{2}$ oz.
Ichthyol.....	$\frac{1}{2}$ oz.
Shake before applying.	

The application, to be successful, should be done very thoroughly, and repeated when necessary. Twice a day may be sufficient; if not, the application is done three times daily. Even phlegmonous cases seem to be beneficially affected.

C. O. Courtright, of Rushville, Ill. (*Ellingwood's Therapeutist*, Apr. 15, 1909), reports that his experience with Ichthyol as a local application has been most gratifying. In **eczemas** and **erysipelas** it seems to meet the indications remarkably well, and to deserve quite the name of a specific. One patient, Mr. T., aged 66, who had the worst form of weeping eczema that the author ever saw in thirty years' practice—the entire body and limbs being completely involved—was relieved of the severe irritation and finally radically cured by the local application of an Ichthyol solution. In an obstinate case of **scrotal eczema** it proved the most efficacious of anything tried.

### Formulas for Eczema

<i>Acute</i>			
Ichthyol.....	1 fl. dr.	Ichthyol.....	30 min.
Zinc Oxide Merck.....	1 dr.	Zinc Oxide Merck.....	5 dr.
Lanum.....	5 dr.	Talcum.....	5 dr.
Petrolatum.....	5 dr.	Lanum.....	10 dr.
Apply night and morning.		Apply once or twice daily, on lint.	

## Formulas for Eczema—(Continued)

Ichthyol. .... 1 fl. dr.  
 Zinc Ointment. .... 1 oz.  
 Oil Citronella. .... 15 min.  
 Apply.

Ichthyol. .... 1 fl. dr.  
 Zinc Oxide Merck. .... 150 grn.  
 Starch. .... 150 grn.  
 Lanum. .... 2 dr.  
 Petrolatum. .... 3 dr.  
 Apply.

Ichthyol. .... 30 to 60 min.  
 Petrolatum. .... 4 dr.  
 Lanum. .... 5 dr.  
 Rub in once or twice daily.

Ichthyol. .... 40 min.  
 Zinc Oxide Merck. .... 30 grn.  
 Starch. .... 30 grn.  
 Lanum. .... 7 dr.  
 Apply on lint.

*Chronic*

Ichthyol. .... 4 fl. dr.  
 Petrolatum. .... 4 dr.  
 Lanum. .... 4 dr.

Apply regularly every night and morning.

Ichthyol. .... 1 fl. dr.  
 Chrysarobin. .... 1 dr.  
 Lanum. .... 4 dr.  
 Petrolatum. .... 4 dr.

Use as preceding. (In circumscribed chronic eczema.)

Soap plaster. .... 1 oz.  
 Liquefy by gentle heat, and add:  
 Ichthyol. .... 30 min.  
 Salicylic Acid. .... 20 to 40 grn.  
 Spread on lint. Use retaining bandage.

Ichthyol. .... 4 fl. dr.  
 Zinc Oxide Merck. .... 4 dr.  
 Petrolatum. .... 4 dr.  
 Apply night and morning.

*General*

Ichthyol. .... 90 min.  
 Lanum. .... 1 oz.  
 Benzoinated Lard. .... 4 dr.  
 Apply morning and night.

Ichthyol. .... 90 min.  
 Salicylic Acid Merck. .... 30 grn.  
 Benzoinated Lard. .... 6 dr.  
 Lanum. .... 6 dr.  
 Apply morning and night.

*Impetiginous*

Ichthyol. .... 20 min.  
 Salicylic Acid Merck. .... 15-20 grn.  
 Zinc Ointment. .... to make 1 oz.

Ichthyol. .... 75 min.  
 Pyrogallol. .... 75 grn.  
 Salicylic Acid Merck. .... 30 grn.  
 Lanum. .... 10 dr.  
 Petrolatum. .... 2 oz.  
 Apply freely.

Ichthyol. .... 15 min.  
 Resorcinol Merck. .... 15 grn.  
 Salicylic Acid Merck. .... 6 grn.  
 Lanum. .... 3 dr.  
 Petrolatum. .... 2 dr.  
 Apply freely.

Ichthyol. .... 20 min.  
 Salicylic Acid Merck. .... 10 grn.  
 Resorcinol Merck. .... 10 grn.  
 Lanum. .... 4 dr.  
 Petrolatum. .... 4 dr.  
 Zinc Oxide Merck. .... 4 dr.  
 Starch. .... 4 dr.  
 Apply freely.

*Seborrheic*

Ichthyol. .... 1 fl. dr.  
 Zinc Oxide Merck. .... 1 dr.  
 Carbolic Acid Merck. .... 30 grn.  
 Precipitated Sulphur. .... 1 dr.  
 Lanum. .... 10 dr.  
 Rose Water. .... 3 fl. dr.  
 Apply freely.

Ichthyol. .... 1 to 2 fl. dr.  
 Expr. Oil Almond. .... 10 fl. dr.  
 Inunction, especially for hairy parts. Begin with weak solution, and gradually increase.

Ichthyol. .... 30 min.  
 Precipitated Sulphur. .... 30 grn.  
 Carbolic Acid Merck. .... 30 grn.  
 Camphor. .... 30 grn.  
 Simple Ointment. .... 14 dr.  
 Apply freely.

## Formulas for Eczema—(Continued)

*Squamous*

Ichthyol.....1 to 2 fl. dr.  
 Water.....1 fl. oz.

Paint on once or twice daily, so long as there is any secretion. If scales are present, remove them before painting.

Ichthyol.....30 min.  
 Precipitated Sulphur.....30 grn.

Petrolatum.....5 dr.  
 Lanum.....5 dr.  
 Apply morning and night. (In squamous eczema of the face.)

Ichthyol.....1 oz.  
 Sulphuric Acid.....2 drops

White Petrolatum.....3 oz.  
 Apply with cotton.

*Vulvar*

Ichthyol.....2 fl. oz.  
 Water.....18 fl. dr.

Apply lint soaked in this solution.

Ichthyol.....10 grn.  
 Lanum.....40 grn.  
 Oil Bergamot.....1 cc.

Apply every evening.

*Complicated with Furunculosis*

Ichthyol.....1 fl. dr.  
 Lead Ointment.....9 fl. dr.

Here, as in the majority of skin affections for which Ichthyol is appropriate, the internal use of Ichthyol is also indicated.

**Epithelioma**

Dr. A. Ravogli (*Monatsh. f. prakt. Derm.*, 1894, Vol. XVIII, No. 4) has had occasion to test the efficacy of the different remedial agents usually employed in the treatment of various skin diseases, among others, **lupus erythematosus** and **psorospermosis**. Having tried mercurial plaster, methylene blue, methyl violet, and iodoform, without beneficial results, he experimented with Ichthyol and obtained gratifying results. Dr. Ravogli uses the remedy either pure, mixed with collodion, as a liniment, or as an ointment. When employing pure Ichthyol he applies it with a camel's-hair brush, allows it to remain for a few hours, and then washes it off with water. It is best in some cases to dissolve away some of the overlying tissue by applying a concentrated solution of potassium hydroxide by means of a swab, and subsequent washing; the remedy can then exert its full action. In the treatment of **epithelioma of the nose** Dr. Ravogli has obtained good results by using the caustic, prior to applying Ichthyol mixed with diachylon plaster.

**Erysipelas**

The use of Ichthyol externally in **erysipelas** has become quite general, and its value fully established as a local

measure; and for some time many dermatologists and general practitioners have been using it internally as well as externally in this disease.

The following reports will give a fair idea of the estimation in which the remedy is held in the treatment of erysipelas by various practitioners in different parts of the world, as well as show the methods in which it is used and the doses that have given favorable results.

After a fair trial in **erysipelas**, Dr. Chas. J. R. McLean says (*Brit. Med. Jour.*, March 9, 1889) of Ichthyol:

"If caught in the early stage this is the best external application I know of; it allays the burning sensations, and either aborts or limits the attack. The solution (1 fl.dr. Ichthyol in 1 oz. water) should be painted on every four hours, forming a complete protective layer over the part. I have used an ointment in some cases, but prefer the solution, as it dries quickly."

In a lengthy article bearing on Ichthyol and its action Dr. Eberson (*Wien. med. Presse*, XXXVI, p. 1587) confirms the reports extant regarding the antiseptic, reducing, and antiphlogistic properties of this remedy, and its efficacy in the treatment of various skin and women's diseases. He then adds a report of a few cases that came under his own observation, and in which the remedy proved most effective.

The author had occasion twice to test the remedy on himself. After the manual delivery of the after-birth in a woman suffering from leucorrhea, a redness and swelling developed on the author's right wrist. He at first applied but a simple dressing of absorbent cotton. The next day he observed that the redness had spread; there was a sensation of heat in the part affected, and of chilliness of the body. He then applied a fifty-per cent. suspension of Ichthyol in glycerin, which soon gave relief. A second application was made the following day, and recovery soon ensued. A few weeks afterward the eruption broke out anew on that spot. The same treatment was pursued, and complete cure thereby effected.

While making an autopsy the author was stung on the arm by a large fly that had fed on the cadaver. He at first paid no attention to this event, but, in a few hours, the part became inflamed, somewhat painful and swollen. He

then applied a fifty-per cent. solution of Ichthyol. On the second day the swelling and pain had diminished, and on the third all symptoms disappeared.

In view of his experience, Dr. Eberson considers Ichthyol a specific against **erysipelas**. He employs a fifty-per cent. suspension in glycerin for adults, and a twenty-five-per cent. mixture with children. These solutions he freely applies with a bristle brush, in concentric rings, beginning about an inch from the edge of the inflamed skin, and finally painting the center several times.

Dr. W. Rosenberg, of St. Petersburg, reports (*Aerztl. Rundsch.*, Vol. VIII, p. 229) a severe case of **erysipelas migrans**, complicated with gangrene of the eyelids and lips, and nephritis, in which brilliant results were obtained by the application of an Ichthyol ointment (1:3 or 1:1, with petrolatum), and a complete cure was obtained.

Prof. von Nussbaum (*Munch. dermat. Monatsh.*, 1886, No. 11) first disinfected the area; then the seat of disease was painted with a fifty-per cent. ointment of Ichthyol, and covered with ten-per cent. salicylated wool. Under this treatment the **erysipelas** rapidly disappeared. All his cases treated with Ichthyol terminated satisfactorily.

Dr. C. Kopp (*Munch. med. Wochenschr.*, 1889, Nos. 35 and 36) used a thick layer of thirty- to fifty-per cent. Ichthyol-anum ointment spread on lint. In four cases cure was effected within two or three days, while in five others five or six days were needed. In no case did the inflammation spread in any considerable degree after beginning the treatment.

Dr. M. Lorenz (*Deut. med. Ztg.*, 1887, No. 59) describes the excellent results of Ichthyol treatment in **erysipelas** of considerable extent and severity, involving the head and neck. The treatment consisted simply in painting with a mixture of 2 parts of Ichthyol with 1 part each of ether and glycerin.

From an elaborate study of the comparative results yielded by treating **erysipelas**: (1) with ice, (2) with tar, and (3) with Ichthyol-collodion, Dr. C. Ulrich, of Copenhagen, concludes (*Hospitals Tidende*, Oct., 1889) that the

last-named was unmistakably the best in almost every respect. The fact that relapse did not occur under the Ichthyol treatment, while it was not infrequent in those cases treated with ice or tar, indicates a greater anti-parasitic power on the part of Ichthyol.

Prof. S. Klein, of the University of Warsaw, has used Ichthyol in the form of a 50-per cent. petrolatum ointment in the treatment of **erysipelas** in 31 cases, of which 18 were severe. His conclusions are as follows (*Berl. klin. Wochenschrift*, 1891, No. 39):

"1.—Ichthyol has undoubtedly a restraining effect upon the development of the streptococcus, either by an immediate influence on the micro-organisms or by its reducing action on the tissues, or by both together.

"2.—It shortens by a half the average duration of the attacks.

"3.—The duration of the treatment amounts to three or four days.

"4.—The disease runs a much milder course under Ichthyol, as seen in the altered type of fever and often in the fall of temperature."

Dr. T. Cranstoun Charles (*Lancet*, 1891, Sept. 26) usually had first a brisk purgative given; then the affected surface was well washed with Ichthyol soap and hot water, and covered for three hours with lint soaked in corrosive-sublimate lotion. After this, the inflamed area and some part of the surrounding healthy skin were smeared with equal parts of Ichthyol and adeps lanæ, and enveloped in salicylated cotton. In some of his cases the remedy was also given internally at the same time, and a 30-per cent. ointment applied.

Prof. Ernst Schwimmer, of Budapest (*Wien. med. Wochenschr.*, 1892, Nos. 29, 30), had an aqueous solution (Ichthyol 1 part, water 3 parts) exclusively used in the treatment of the disease, including the severest forms. The inflamed and swollen parts, with some portion of the surrounding tissues, were painted two or three times daily with the lotion. Where the face was affected, the edema of the eyelids and swelling of the cheeks rapidly diminished, as did also the redness and general febrile condition. Prof. Schwimmer ascribes to Ichthyol a true specific action upon streptococci and, in consequence, upon the course of the disease.

Dr. Morgan Dockrell (*Medical Press*, 1892, Dec. 7) applied pure Ichthyol along the margin of the affected area, extending an inch toward the center and a similar width over the unaffected skin; the rest of the inflamed surface was painted over with 30-per cent. Ichthyol gelatin. In his eight cases no spreading took place after the application, and the patients got speedily better.

Dr. S. T. Radcliffe, of Washington (*Therap. Gaz.*, 1892, No. 5), says:

"In three days after treatment was begun the improvement was manifest, and the fever never rose after the second day, but gradually declined. The Ichthyol is not at all unpleasant. It does not stain the skin, and is easily washed off. Any spot on the garments is easily removed by washing. The best form is an ointment of equal parts Ichthyol and petrolatum or lanum; or equal parts of Ichthyol, lanum, and water will often be better where a large surface is under treatment. I have this applied uniformly over every part of the erysipelatous inflammation (even ears, eyelids, etc.), and repeat this at least twice daily (without washing!). In three days, on washing it off with a little tepid water, and with or without a little lather of fine soap, it will be found that the swelling has subsided, and the erysipelatous process has been arrested, except perhaps on the extreme borders, when it will suffice to apply the Ichthyol only to the outskirts. But a better plan is to continue the application (without washing) until the sixth day, or until all traces of the disease externally have disappeared. This will not be beyond the fifth or sixth day."

Ichthyol has been used by Dr. Charles W. Allen, of New York, in one hundred cases of erysipelas with excellent results (*Med. News*, Vol. LXXIV, p. 426). The great majority of cases were of **facial erysipelas**; in these the whole anterior and posterior nares were covered as far as possible with a fifty-per cent. Ichthyol solution, all fissures and excoriations at the introitus (a cutaneous defect having been found to serve as a *porte d'entrée* for the infecting micro-organisms in the majority of cases) being particularly looked after. The results were surprisingly good, the symptoms (temperature, etc.) frequently disappearing within twenty-four hours after beginning the treatment; many patients were discharged cured on the second or third day. On the skin surface a twenty-five-per cent. solution of Ichthyol in collodion was applied. In **erysipelas of the extremities** a rubber adhesive band was generally applied in combination with the Ichthyol paint, and always with the most gratifying results. No deaths were recorded in the one hundred cases



treated. The advantage of rubber adhesive-plaster bands over the application of several layers of contractile collodion is that the latter is apt to break at some point, and it is at this break that the erysipelatous process is seen to develop and spread. The combined treatment with Ichthyol paint and elastic bandages has also yielded prompt results in a number of children who were treated for erysipelas of the extremities. The author is confident that if this plan be resorted to early, and be properly carried out, no necessity will arise for scarification to produce a barrier, nor to anti-streptococcic serum, which, it would seem, appears to be of doubtful efficacy in severe cases in infancy and childhood.

Dr. George F. Maddock (*B'klyn Med. Jour.*, 1895, Vol. IX, p. 175), in a paper read before the Brooklyn Dermatological and Genito-Urinary Society, reports on several cases of **erysipelas**, and a number of other severe inflammatory conditions of the skin, in which Ichthyol was used with decided benefit. The Ichthyol was applied in 5- to 40-per cent. ointments, according to the degree of inflammation; the greater the grade of the latter the greater the percentage of Ichthyol employed. It is reported that in most cases a cure was effected in from three to seven days.

A. T. Botts, of Warrensburg, Ill. (*Alkaloid. Clinic*, Sept., 1905), records some eighteen cases of **erysipelas** treated in the last three years with Ichthyol-collodion, without a single failure. The method of treatment was to paint the preparation over the diseased area, beginning well out on the healthy tissue; apply frequently, one coat on top of another (without washing) until the layers begin to peel, when it may be removed with warm water and soap. The tissues underneath will be found in a healthy condition. The only objection he finds to this treatment is the black color when applied to exposed surfaces; but the author concludes the patient is generally willing to isolate himself if assured that relief will be quicker than by ordinary methods.

Having had occasion to try various agents, internal and external, for the alleviation and cure of **facial erysipelas**, Dr. E. S. Breese, of Dayton, Ohio (*Merck's Archives*, VII,

1905, p. 57), found a mixture of Ichthyol and tincture of iodine most effective. He employed it and has seen it used in fifteen cases where the results were universally satisfactory. As soon as a diagnosis of erysipelas is made, a calomel purge is given, tincture of iron chloride in moderate doses ordered every three hours, and Ichthyol and tincture of iodine, equal parts, painted well over the diseased area. The local application is made daily, care being taken to go beyond any spreading border. The symptoms usually abate in three to five days. The epidermis of the painted area exfoliates. The temperature seldom becomes high, and delirium occurred only twice. This remedy, the author says, acts almost like a specific.

Dr. Keirle (*Philad. Med. Journ.*, VII, No. 7) reports having treated 30 cases of **erysipelas** by the following method with uniform success: The affected area is first inclosed in a ring of tincture of iodine repeatedly painted on from two to three inches from the edge of the reddened area. The whole surface inclosed in the ring is then covered with an ointment composed of Ichthyol 1 dram, and petrolatum 1-2 ozs. This is covered with a piece of gauze, a hot stupe being applied and renewed every four hours. At the end of 12 hours, the Ichthyol ointment is washed off, and a fresh coat applied.

Dr. Hobart A. Hare, (*Practical Therapeutics*, 10th edit., 1904, p. 659) has the following to say regarding the value of Ichthyol in this disease:

"By far the best dressing for the majority of cases of **erysipelas** is a modification of that of Nussbaum, which the author has tried with success. The skin of the part involved is carefully cleansed with Castile soap of the purest form, and then it is washed off with a 1:1,000 solution of mercury bichloride. The skin is dried with a soft towel, and a thick coating of Ichthyol with petrolatum or lanum applied, the strength of this ointment being half and half. Over this is placed antiseptic gauze or sterilized absorbent cotton, and adhesive strips or a bandage is used to keep the dressing in place. Sometimes the ointment alone may be used if the area is small. Under this treatment the results are often extraordinary, in all stages of the malady."

Z. Edwards Lewis, of New Rochelle, N. Y. (*N. Y. Med. Jour.*, July 22, 1905), treats **erysipelas of the face** with Ichthyol. It may be used in any strength, but a 40-to 50-per cent. solution is his standard. The solution is

painted carefully over every bit of the inflamed surface and over at least half an inch of all adjacent sound skin. According to the virulence of the attack and to the time that has elapsed from the onset, he regulates the frequency of reapplication—from six hours to three days. The face should not be washed for reapplication unless there is a material decrease of tumefaction. The fresh solution, as it is applied, revivifies all that remains. The effect of the application is immediate, and in a very short time the patient gives expression to the relief felt. Tumefaction subsides—sometimes with astonishing rapidity—and generally there is uninterrupted recovery. Applications are repeated at increasing intervals till a thorough washing, after a three days' interval, shows no disease. The applications are to be made without friction, with a soft brush or pledget of cotton, preferably the former.

Dr. Weismann, of Lindenfels (*Reichs-Medizinal-Anzeiger*, 1908, No. 6), states that, in 10 cases of erysipelas treated by him, Ichthyol very rapidly relieved the feeling of tension of the skin.

### Formulas for Erysipelas

Ichthyol..... 2 fl. dr.  
 Resorcinol Merck..... 1 dr.  
 Mercurial Ointment..... 1 oz.  
 Lanum..... 1 oz.

Anoint parts freely, cover with oiled silk or other impermeable material, and apply light dressing and bandage.

Ichthyol..... 2 fl. dr.  
 Prepared Chalk..... 4 dr.  
 Lard..... 4 dr.  
 Apply.

Ichthyol..... 4 fl. dr.  
 Ether..... 4 fl. dr.  
 Glycerin..... 2 fl. dr.  
 Paint. (Especially for hairy parts.)

Ichthyol..... 30 min.  
 Iodoform..... 30 grn.  
 Creolin-Pearson..... 30 min.  
 Lanum..... 4 dr.  
 Zinc Ointment..... 4 dr.  
 Apply on lint.

Ichthyol..... 45 min.  
 Resorcinol Merck..... 45 grn.  
 Lanum..... 7 dr.  
 Rub in every hour.

Ichthyol..... 2 fl. dr.  
 Petrolatum..... 5 dr.  
 Lanum..... 5 dr.  
 Rub in (massage) or apply on dressings.

Ichthyol..... 2 fl. dr.  
 Distilled Water..... 6 fl. dr.  
 Apply to affected parts twice daily, and leave uncovered. Continue inunctions until subsidence of inflammation.

Ichthyol..... 2 fl. dr.  
 Petrolatum..... 3 dr.  
 Lanum..... 3 dr.  
 After affected skin has been washed with soap and water, rub ointment in once daily.

## Formulas for Erysipelas—(Continued)

Ichthyol.....  $\frac{1}{2}$  oz.  
 Lard (or Petrolatum)..... 1 oz.  
 Oil Citronella..... 20 drops

Wash the skin well, anoint with the ointment, and then cover with lint upon which some of the ointment has been spread.

Ichthyol..... 1 oz.  
 Lanum..... 1 oz.

Spread liberally on some old muslin, and apply; renew morning and evening.

Ichthyol..... 2 dr.  
 Salol..... 1 dr.  
 Camphor..... 1 dr.  
 Menthol..... 20 grn.  
 Petrolatum..... 4 dr.  
 Lanum.....  $1\frac{1}{2}$  oz.  
 Oil Rosemary..... 10 drops

Useful in *phlegmonous* forms.

*Traumatic Erysipelas*

Ichthyol..... 2 fl. dr.  
 Spt. Ether..... 2 fl. dr.  
 Collodion..... 4 fl. dr.

After previous careful washing of adjacent locality with soap, briskly rub it and erysipelatous area with solution.

Ichthyol..... 1 fl. oz.  
 Petrolatum..... 4 dr.  
 Lanum..... 4 dr.

After the wounds have been thoroughly disinfected and covered with iodoform-gauze, rub in energetically (massage), beginning a hand's breadth from inflamed cutaneous area; then rub into part affected with erysipelas after it has been washed with soap-water; then apply sufficient salve to cover all of affected area and give it a uniform dark-brown color; cover with thin layer of absorbent gauze moistened with salicylic-acid solution, and over this a much thicker layer of cotton-wool. A light dressing completes procedure, which must be repeated two or three times a day, and continued until three or four days elapse without any elevation of temperature being noticed. For extremely hairy parts, a salve suffices consisting of equal parts of Ichthyol, water, and lanum.

*Wandering erysipelas*

Ichthyol..... 45 min.  
 Zinc Ointment..... 7 dr.

Rub over whole surface of body once or twice daily.

(Also indicated in erysipelas of *infants*).

**Erythema**

In the **acute erythema** of X-ray treatment Dr. C. L. Leonard (*Journ. Amer. Med. Assn.*, May 6, 1905) employs a zinc-stearate powder with 10 per cent. Ichthyol, which he thinks acts as a prophylactic against severe burns.

Dr. Alexander Brownlie, of Redcar, England (*Brit. Med. Journ.*, Jan. 5, 1901, p. 17), reports a case of **erythema nodosum** that had resisted all remedies until Ichthyol was used. He employed a solution prepared by adding 2 drams of Ichthyol to a mixture of 3 drams alcohol and 3 drams ether. He says:

"The effect was most marked, the relief being immediate. The burning pain was greatly diminished after the first application, and disappeared altogether in a day or two."

Prof. N. O. Gadde (*Therap. Monatsh.*, 1890, No. 3) describes in detail cases of **rosacea**, **herpes zoster**, **urticaria**, **purpura**, **erythema**, etc., in which he successfully employed Ichthyol. By rubbing in a 50 per cent. ointment, this author on several occasions arrested incipient whitlow.

### Formulas for Erythema

Ichthyol.....	1 fl. dr.	Ichthyol.....	1 fl. oz.
Lanum.....	6 dr.	Oil Lavender.....	15 min.
Cold-Cream.....	4 dr.	Paint.	
Apply to reddened surface.		(In <i>erythema multiforme</i> , <i>urticaria</i> , <i>lichen urticatus</i> , <i>erythema following burns</i> , <i>frost-bite</i> , and <i>lupus</i> .)	
Ichthyol.....	1 fl. dr.	Ichthyol.....	90 to 150 min.
Starch.....	2 dr.	Glycerin.....	3 fl. oz.
Zinc Oxide Merck.....	2 dr.	Rub in, after previous washing with boric-acid solution (four-per cent.). Cover with absorbent cotton.	
Petrolatum.....	4 dr.	(In <i>exudative erythema</i> of the <i>new-born</i> , <i>intertrigo</i> , <i>prurigo</i> and other affections accompanied by burning, itching pain, where an astringent and anodyne action is desired.)	
Ointment. (In <i>toxic erythema after influenza</i> .)			
Ichthyol.....	2 dr.		
Ether.....	3 dr.		
Alcohol.....	3 dr.		
Apply with a brush.			

### Excoriations

Dr. Lorenz (*Therap. Gazette*, 1887, p. 693) says:

"In the excoriations common among children, and in all solutions of the continuity of the skin from which they often suffer, Ichthyol is of great utility applied immediately after bathing. It causes at first a slightly burning sensation, but this is succeeded by cessation of all pain and irritation."

### Herpes

Dr. E. H. Squibb, in *Transactions of the New York State Med. Assoc.*, 1897, p. 450, says:

"The dermatologists are making good use of this agent. It has been used effectively in **herpes zoster**, and the like."

"Ichthyol is fast gaining favor among the profession. . . . In the different forms of **lupus**, and also in **eczema**, and **herpes**, Ichthyol has been used both internally and externally with great success."—(*Therap. Gaz.*, 1888, p. 273.)

Prof. N. O. Gadde (*Therap. Monatsh.*, 1890, No. 3) describes in detail cases of **herpes zoster**, amongst others, in which he successfully employed Ichthyol.

*Le Progrès Médical*, 1887, No. 11, states that excellent results were obtained by Dr. Lartigan through the use of Ichthyol in herpes.

"Ichthyol, either mixed with equal parts of water or in the form of an ointment, is an extremely satisfactory preparation for treating **herpes zoster**."  
—(*Albutt's System of Medicine*, Vol. IX, p. 636.)

### Formulas for Herpes

Ichthyol.....	2 fl. dr.	Ichthyol.....	10 fl. dr.
Ext. Opium.....	10 grn.	Starch.....	10 dr.
Gelanthum.....	6 fl. dr.	Conc. Solut. Albumin...	15-25 min.
Apply with brush three times daily.		Water.....	to make 3 oz.
(Curative and anodyne.)		Apply locally with a brush, and give Ichthyol internally, 10 drops three times daily.	

### Ichthyosis

Dr. M. Klonk (*Ohio Med. Jour.*, 1896, p. 145) reports a particularly severe case of **ichthyosis** treated by him in a boy of fifteen years of age. The disease first manifested itself in infancy, and had resisted all previous treatment by numerous physicians, as well as treatment with household remedies of every kind recommended from time to time. Dr. Klonk first gave the patient a warm bath of twenty minutes' duration, containing 1 fl.oz. of pure Ichthyol, and then rubbed him down with a bland soap and water, a rough towel being used for drying. Following this the affected portions were rubbed with pure Ichthyol, the patient wrapped in woolen blankets, and given repeated doses of extract of jaborandi to stimulate diaphoresis. The next day the patient was rubbed down with soap and water, and in the evening he took a bath in warm water containing sea-salt. On the third day, the treatment of the first day was repeated, the patient thus receiving, in the course of one week, three Ichthyol baths and inunctions, three warm soap-baths (in the morning), and three sea-salt baths (in the evening). Internally the patient took three 2-min. capsules of Ichthyol daily for the first week, six daily from the second week, and eight daily during the sixth week; this quantity being given for some time. Under this treatment the patient gained rapidly in weight; his appetite was

splendid, and the horny masses atrophied, being frequently found in the water after bathing. After four weeks' treatment the greater portion of the diseased surface was free, the skin being smooth, soft and moist. During the day the patient's body was kept moist with glycerin and water (1:3); and occasionally an ointment of sulphur, resorcinol, zinc, and benzoinated lard was substituted. Another case is also cited in which the most remarkable results were obtained in the short period of eighteen days; in short, the splendid results achieved by this course of treatment have convinced Dr. Klonk that Ichthyol is a remedy possessing specific virtue in ichthyosis, even of very severe character.

### Formulas for Ichthyosis

Ichthyol. ....	1 fl.dr.	Zinc Oxide Merck. ....	1 dr.
Powd. Camphor. ....	10 grn.	Lanum. ....	1 oz.
		Apply thrice daily.	
Ichthyol. ....	15 grn.		
Lanum. ....	2 oz.	Ichthyol. ....	10 min.
Expressed Oil Almond. ....	1 oz.	Lanum. ....	2 oz.
To be rubbed in.		Apply three times daily.	

### Inflammations

The *Med. Standard* (May, 1905) says:

"Ichthyol is a most valuable substance to reduce inflammatory swelling, and in septic conditions affecting the skin. While its odor is very distressing to many patients, it can be concealed by the addition of oil of citronella, 20 minims to the oz. of ointment."

Dr. Walter T. Slevin (*N. Y. Med. Jour.*, LXXIII, No. 10) states that, after experimenting with different formulas in a number of cases, he at last found a mixture which, if properly used, will relieve deep-seated as well as superficial inflammations. The formula is as follows:

Ichthyol. ....	45 grn.
Lead Iodide. ....	45 grn.
Ammonium Chloride. ....	10 grn.
Petrolatum. ....	to make 1 oz.

The substitution of glycerin, rose ointment, or cacao butter does not alter its efficiency. It should be applied by rubbing upon the inflamed parts. The results of the application in three different cases are described by the

author, who believes that this mixture should be most effective when used in chronic conditions, inflammations, glandular enlargements, and ulcerations, whether of specific nature or otherwise, as it is a great aid to absorption.

## Intertrigo

In an article in which the etiology of the affection is fully described, Sabouraud (*La clinique*, Jan. 22, 1909) gives a series of formulas for use in the treatment of **intertrigo**. The treatment is purely local, and it varies with the surface indications. Acute cases must be treated like an eczema. Where the surface is inflamed, and the epidermis moist and sore, it is best to apply a weak solution of silver nitrate, of 3.5 per cent. strength; or, if a stronger solution is indicated, one of 10 per cent., the strength being determined by the sensitiveness of the tissues. A very moist, oozing intertrigo is treated each day with a lotion composed of:

Silver Nitrate.....	1 dr.
Water.....	3 fl.oz.

The use of Ichthyol is indicated where the oozing is not excessive and the lesion is red and but slightly moist. A weak solution of Ichthyol is used as in the following prescription:

Ichthyol.....	1 dr.
Resorcinol.....	15 grn.
Water.....	3 fl.oz.

A stronger solution contains double the quantities of Ichthyol and resorcinol. These topical applications are best made with a wad of absorbent cotton.

## Formulas for Intertrigo

Ichthyol.....	1 dr.	Ichthyol.....	2 dr.
Magnesium Carbonate. } each	5 dr.	Absolute Alcohol..... } each	2 ½ dr.
Zinc Oxide.....		Ether.....	

Apply on cotton wool, and bandage.

## Keloid

Dr. Morgan Dockrell (*Med. Press and Circ.*, 1892, Dec. 7) states that among the many cases in which he has found Ichthyol beneficial is **Alibert's keloid**, in which marked



shrinking, diminution in area, and general softness were brought about by persistent application of 30-per cent. Ichthyol gelatin.

The following also is useful:

Ichthyol.....	4 fl.dr.
Salicylic Acid.....	1 dr.
Lanum.....	1 oz.
Apply frequently until softened.	

## Lupus

Prof. Hobart A. Hare (*Practical Therapeutics*, 1905, p. 278) says:

"Ichthyol is without doubt one of the most remarkable substances used for medicinal purposes which has appeared in the last decade. In skin diseases it has been most highly recommended on both sides of the Atlantic, and is employed in the form of Ichthyol ointment . . . even in **lupus**. . . . In almost all chronic skin affections it is of the greatest value."

Malcom Morris, F. R. C. S. E., (*Amer. Med.-Surg. Bull.*, 1898, p. 1072) says that Ichthyol "is of service in **lupus erythematosus** by reducing hyperemia"; and Dr. Leo Leistikow (*Archiv f. Schiffs u. Trop. Hyg.*, 1898, No. 2) states that **erythematous lupus** promptly responds to the local application of Ichthyol. He also says that moist bandages or paste are useful in the later treatment of **lupus vulgaris** after previous cauterization or excision.

## Formulas for Lupus

Ichthyol.....	2 fl.dr.	Ichthyol.....	15 min.
Zinc Oxide Merck.....	5 dr.	Precipitated Sulphur.....	15 grn.
Starch.....	5 dr.	Benzoinated Zinc Ointment.	
White Petrolatum.....	5 dr.		to make 1 oz.
Mercury Oleate (5%).....	5 dr.	Apply twice daily.	
Salicylic Acid Merck.....	80 grn.	(In <i>lupus erythematosus</i> .)	
Red Bole.....	to color	Ichthyol.....	1 fl.dr.
Rub in twice daily.		Lanum.....	4 dr.
(Preparatory treatment of <i>lupus vulgaris</i> .)		Petrolatum.....	4 dr.
		(In <i>after-treatment</i> of <i>lupus</i> .)	
Ichthyol.....	1 fl.dr.	Ichthyol.....	4 fl.dr.
Oil Cade.....	1 fl.dr.	Liq. Carbolic Acid.....	4 fl.dr.
Precipitated Sulphur.....	1 dr.	Paint.	
Zinc-Oxide Ointment.....	1 oz.	(For <i>cauterizing</i> in <i>lupus exulcerans</i> , or for <i>after curettement</i> .)	
Apply twice daily.			

## Prurigo and Pruritus

"For **pruritus senilis** a 30-per cent. solution in water is recommended; for **pruritus**, burns, and ulcers, a 10-per cent. solution."—(Martindale's "*Extra Pharmacopœia*," 1898, p. 267.)

Dr. Lorenz (*Deut. mediz. Zeitung*, 1887, No. 59) describes a case of itching and burning of the skin, diagnosed as prurigo, for which nearly the entire list of approved remedies had been vainly prescribed for over ten years. Ichthyol was then resorted to, and the next day the patient reported that she had hardly any itching and could sleep well. The treatment was continued for a fortnight, with the result that the patient was cured and no relapse took place for months afterward, so long as the patient was under observation.

Dr. A. Mueller (*Australasian Med. Gaz.*, 1890, No. 108) says:

"In a case of **prurigo** in which the itching was almost unbearable, and seriously impaired health by preventing sleep, Ichthyol promptly caused the itching and eruption to disappear; other methods of treatment, previously resorted to, had proved useless."

Griffith and Cerna, in *Annual of the Universal Med. Sciences*, 1893, Vol. V, p. A. 80, report as follows:

"A case of **generalized pruritus** which yielded in a few days to the application of a 10-per cent. solution of Ichthyol and baths with Ichthyol soap. Good results were also obtained in another case of pruritus of the scrotum, and in a third case of **dermatitis** accompanied by suppuration."

The following is stated by Dr. A. Mueller, in *Australasian Med. Gaz.*, 1890, No. 108:

"Some months ago I attended two severe cases of **pruritus pudendorum**. Alternatives internally and local applications of strong hydrocyanic-acid ointments with morphine, and finally with cocaine, gave but temporary relief. I gave Ichthyol internally in large doses, had the parts well anointed with Ichthyol ointment (25 min. to 1 oz.) and ordered a warm hip-bath to be taken every night at bedtime." Under this treatment, steady improvement took place.

Dr. Doizy (*Bull. Méd.*, Vol. XII, p. 904) reports that he has had under observation a patient suffering from a **vulvar pruritus**. The disease had resisted all the usual remedies, such as alkaline baths, zinc ointment, hot lotions, chloral solutions, carbolic acid, mercury bichloride, etc., but was finally overcome by the application of a 15-per cent. Ichthyol ointment.

Dr. A. Ravogli, of Cincinnati, states (*Med. News*, LXXXIII, No. 26) that, in pruritus originating from chronic disturbances of the male urethra, Ichthyol used locally has given the best results in stopping the itching sensation and healing the results of the scratching, excoriations, and eczema. The author uses the following liniment: Ichthyol 2 dr.; lime-water, expressed oil almond, of each 4 dr.; rose-water, glycerin, of each 6 dr. The liniment is applied on cotton or English lint, and it is left on for the whole night; in the morning it is washed off with a solution of carbolic acid and glycerin of each 1 dr., rose-water and alcohol, of each 3 dr.

Dr. Louis J. Hirschman, of Detroit, reports (*N. Y. Med. Journ. and Philad. Med. Journ.*, July 29, 1095, p. 253) that, in **pruritus**, the one remedy he used more than any other was pure Ichthyol, which he left on all day, applying at night a 20-per cent. resorcinol in tar ointment with a little belladonna, and he believed he had obtained more relief from it than from anything else.

Dr. Frederick S. Macy, of the United States Army (*N. Y. Med. Journ.*, Apr. 28, 1906), states that in cases of **pruritus ani** of obscure origin, in which the skin about the anus is not as well nourished as it should be, or when there are nervous or infectious complications, he introduces a tampon, once daily after a stool, of a 10-per cent. Ichthyol-glycerin solution if there be constipation, or with lanum if there be none, well up into the rectum. This is best done through a speculum. Though the latter may cause some pain at first, the insertion of the instrument is itself an aid to the treatment, and the patient will tell you he feels better for it. Relief from this method has been immediate in all the cases so treated by the author. The fissures, if there are any, heal, and the condition of chronic constipation is much benefited. The itching ceases with the insertion of the dilator; of course it recurs in the intervals between the applications of the instrument, but with less severity and less frequency day by day, until it disappears altogether.

Dr. Hirschkron (*Deut. Aerzte-Ztg.*, 1907, No. 1) reports

having obtained excellent results in **pruritus**, using a 10-per cent. Ichthyol-glycerin solution or a 6-per cent. Ichthyol ointment.

Dr. Weissmann, of Lindenfels (*Reichs-Medizinal-Anzeiger*, 1908, No. 6) reports having used Ichthyol in 2 cases of **vulvar pruritus** or **fissure**. In all these cases the Ichthyol gave far more satisfactory results than were afforded by the cocaine ointment ordinarily used in these affections. Similar success was also obtained in scrotal pruritus.

### Formulas for Prurigo and Pruritus

#### Anal

Ichthyol.....	2 fl. dr.
Resorcinol Merck.....	10 grn.
Cold-cream.....	3 dr.
Lanum.....	3 dr.

Apply morning and night on pledget of absorbent cotton.

#### Senile

Ichthyol.....	45 min.
Resorcinol Merck.....	15 grn.
Lanum.....	1 oz.

Apply to itching parts. (Avoid coffee and alcohol.)

Ichthyol.....	45 min.
Lanum.....	to make 1 oz.

After each stool wash part, and anoint herewith.

Ichthyol.....	1 fl. dr.
Distilled Water.....	9 fl. dr.

Paint.

(Also in *pruritus hiemalis*, pruritus of *diabetics*, of *neurasthenics*, and of patients suffering from *spinal disease*.)

#### Scrotal

Ichthyol.....	1 fl. dr.
Spt. Ether.....	4 fl. dr.
Collodion.....	4 fl. dr.

Paint on night and morning freely, after bathing parts.

Ichthyol.....	2 fl. dr.
Absolute Alcohol.....	2 fl. dr.
Ether.....	10 fl. dr.

Externally, as paint or inunction.

#### Vulvar and Vaginal

Ichthyol.....	2 fl. dr.
Salicylic Acid Merck.....	1 dr.
Distilled Water.....	7 fl. dr.

Ichthyol.....	10 grn.
Menthol.....	1 grn.
Bism. Subgallate.....	5 grn.
Petrolatum.....	50 grn.

Apply two or three times daily.

Ichthyol.....	1 to 2 fl. dr.
Distilled Water....	to make 12 fl. dr.

(Also for pruritus due to *oxyuris*.)

Ichthyol.....	90 min.
Salicylic Acid Merck.....	15 grn.
Lanum.....	4 dr.
Petrolatum.....	4 dr.

Anoint parts as required.

Ichthyol.....	150 min.
Menthol Recryst. Merck...	8 grn.
Quinine Sulphate.....	20 grn.
Carbolic Acid Merck.....	24 grn.
Oint. Mercuric Nitrate....	1 dr.
Castor Oil.....	10 fl. dr.
Lanum.....	6 dr.

Apply freely, after washing parts.

Ichthyol.....	1 fl. dr.
Washed Sulphur.....	1 dr.
Tar Ointment.....	4 dr.
Lanum.....	2 dr.

Apply two or three times daily, followed by warm full bath containing four oz. sulphurated potassa.

Ichthyol internally, in  $\frac{j}{\text{doses}}$ ; in conjunction with treatment with tar.

### Psoriasis

H. G. Brooke, M.B., M.R.C.S., Physician to the Manchester and Salford Hospital for Skin Diseases, and lecturer on Dermatology, Owen's College, says (*Allbutt's System of Medicine*, Vol. IX, pp. 582 and 583) that, in treating **psoriasis** with chrysarobin, "Ichthyol diminishes the likelihood of the rapid, angry-looking dermatitis which an overdose so quickly sets up." The following he pronounces "very efficacious": Chrysarobin, Ichthyol, of each 5 parts; salicylic acid, 3 parts; petrolatum, 100 parts. When pyrogallol is used instead of chrysarobin he says "Ichthyol may be added with advantage." The following, he says, is "a lotion which I apply with safety over large surfaces": Pyrogallol, 15 grn., Solution of Coal-Tar (*B. P.*), 15 min., Ichthyol, 1 fl.dr., and Water to make 1 fl.oz.

#### Formulas for Psoriasis

Ichthyol..... 1 fl. dr.  
Traumaticin..... 1 fl. oz.  
Paint.

Ichthyol..... 5 fl. dr.  
Petrolatum..... 6 dr.  
Lanum..... 6 dr.  
Soft Soap..... 6 dr.  
Anoint hairy parts once a day.

Ichthyol..... 45 min.  
Salicylic Acid Merck..... 15 grn.  
Tar..... 45 min.  
Pyrogallol Merck..... 30 grn.  
Lanum..... 6 dr.  
Petrolatum..... 2 dr.  
Apply night and morning after bathing.

Ichthyol..... 1 fl. dr.  
Solut. Gutta-Percha..... 10 fl. dr.  
Apply two or three times daily.  
(In *palmar* psoriasis.)

Ichthyol..... 1 fl. dr.  
Collodion..... 5 fl. dr.  
Ether..... to dissolve  
Rub in every fourth day after bath of long duration.

Ichthyol..... 90 min.  
Pyrogallol Merck..... 90 grn.  
Salicylic Acid Merck..... 90 grn.  
Olive Oil..... 5 fl. dr.  
Lanum..... 5 fl. dr.  
Apply morning and night, after bathing and thorough drying.

### Psorospermosis

Dr. A. Ravogli (*Monatsh. f. prakt. Derm.*, 1894, Vol. XVIII, No. 4) has had the occasion to test Ichthyol in **psorospermosis ulcerosa**, and **psorospermosis follicularis**. Having tried mercurial plaster, methylene blue, methyl violet, and iodoform, without beneficial results, he experimented with Ichthyol and obtained gratifying results.

Dr. Ravogli uses the remedy either pure, mixed with collodion, as a liniment, or as an ointment. When employing pure Ichthyol he applies it with a camel's-hair brush, allows it to remain for a few hours, and then washes it off with water.

### Formulas for Psorospermiosis

#### *Ulcerous and Follicular*

Ichthyol..... 4 fl.dr.

Oil Eucalyptus..... 8 min.

Paint ulcers and affected parts; allow to remain for a few hours, then wash off with warm water.

Ichthyol..... 3 fl.dr.

Spt. Ether..... 10 fl.dr.

Collodion..... 10 fl.dr.

Paint on once or twice daily.

(In *follicular* psorospermiosis, especially where the process of extensive or hairy surfaces are to be treated.)

Ichthyol..... 2 fl.dr.

Lead Ointment (Hebra).... 1½ oz.

Spread on linen and apply to ulcerated surfaces.

Ichthyol..... 2 fl.dr.

Expr. Oil Almond..... 1 fl.dr.

Lime-Water..... 1 fl.dr.

Rose-Water..... 8 fl.dr.

Glycerin..... 8 fl.dr.

Wash or paint parts herewith.

### Scabies

Dr. DuBois (*Med. Bulletin*, Feb., 1908) states that he has obtained excellent results in **scabies** by ordering 250 to 300 grains of Ichthyol added to a bath, and allowing patients to remain in the bath for 4 to 6 hours.

### Scleroderma

The *Deut. med. Wochenschr.* (July 14, 1899) reports the experience of Prof. Mosler, of the University of Greifswald, in the treatment of extensive **diffuse scleroderma** of over a year's development with Ichthyol. It states as follows:

"Prof. Mosler exhibited his patient (a woman of forty-eight) several times at the meetings of the Greifswald Medical Society, and on the May preceding the publication of his report again had her present. He described several previous cases of the same disease, treated by him with cod-liver oil and sodium salicylate internally, with vapor-baths, mud-baths, and copper inunctions; and by others with thyroidin, mercury, iodine, massage, electricity, sulphur baths, and alkaline baths. The failure, or, at best, very limited success, of these and other methods induced him to try, as a novel experiment, Ichthyol baths.

"The Ichthyol baths are hot full baths, and of 15 to 20 minutes' duration, to which 2 oz. of Ichthyol have been added. They are given three times per week. After each bath the patient is kept in woolen wraps for 1 to 2 hours. Besides, the limb in which the ailment first manifested itself before spreading over the body is kept continuously under a dressing of 10-per

cent. Ichthyol-petrolatum ointment, renewed every evening. The suppressed perspiration returned after the third bath; and the skin on the affected parts had become markedly thinner, more supple, and less tense."

Prof. Uhlenhuth, of Koch's Institute for Infectious Diseases, at the University of Berlin, presented before the physicians of the Charité Hospital, at Berlin, a man who had been suffering from **diffuse scleroderma** of about two years' development, with almost total atrophy of the thyroid gland, and probably a complication with Addison's disease. The history is as follows (*Berl. klin. Wochenschr.*, March 6, 1899):

"The case had at first been treated with highly nutritive diet, iron, and cod-liver oil; later on, arsenic, quinine, and sodium salicylate were used; also thyroïdin and suprarenal extract. Iodides, hot baths, and a variety of ointments were also employed. All this medication had little or no effect on the disease. Recently, in imitation of Mosler's method, which had yielded good results in the case described, Ichthyol baths were applied in the same manner as described by Mosler. On the days when no bath was given the entire surface was anointed with 10-per cent. Ichthyol ointment. In this way the patient had taken twenty baths at the date of report, and with decidedly favorable results. The skin became so much softer and more supple that the patient, who before the Ichthyol treatment had been unable to rise from his bed on account of the dermic and subdermic tension over the entire body, could, at the time of the report, already move about with ease. An agent such as the Ichthyol bath—which is capable of influencing favorably in so brief a time a deep-seated and refractory systemic disorder like general diffuse scleroderma—promises an extended scope of usefulness in other severe and intractable general diseases which are in any way dependent on derangement of metabolic functions."

### Sycosis

The *Wien. med. Blätter* (1897, No. 1) refers to a novel method of administering Ichthyol for **sycosis coccygenes** and **parasitaria**. It states as follows:

"The treatment of **sycosis** with Ichthyol has been carried out for a period of three years by Dr. Ehrmann, of Vienna, who employed cataphoresis as a means of introducing the remedy more thoroughly into the infected tissues. The apparatus employed was a glass globe provided with a rubber ring at the periphery to insure close contact, and having at the bottom an amalgamated-zinc plate, the balance of the space being filled with cotton impregnated with the solution used, the whole serving as the cathode, and being applied to the part to be treated. The anode was applied to the arm, and consisted simply of a moist electrode. As a rule, the solutions were applied at the anode, but in the case of Ichthyol, of which 10-per cent. solutions were used, better results were obtained by using it at the cathode. By this means twelve cases of sycosis parasitaria and thirty-seven of sycosis coccygenes were treated. Nine days were required on an average for a cure in the former cases, daily

sittings being had; and in the latter case the period required for a cure ranged between three and fifteen months. The average time required in these severe cases was about seven weeks, the treatment in many being daily, and in a number only three times a week. A current of 15 milliampères was employed, which was regulated by means of a rheostat. Each affected portion was thus treated for ten minutes at a time. The excellent results obtained, therefore, warrant the writer's belief that cataphoresis is an effective form of treatment in a variety of affections that have heretofore been with difficulty treated."

### Formulas for Sycosis

Ichthyol. . . . . 1 fl.dr.  
 Chrysarobin. . . . . 1 dr.  
 Salicylic Acid. . . . . 30 grn.  
 Lanum. . . . . 3 oz.  
 Anoint and cover part with gutta-percha tissue.

Ichthyol. . . . . 2 fl.dr.  
 Soft Soap. . . . . 2 dr.  
 Salicylic Acid Merck. . . . . 40 grn.  
 Lanum. . . . . 4 dr.  
 Apply evenings.

Ichthyol. . . . . 1 fl.dr.  
 Benzoinated Zinc Ointment. . . . . 20 dr.  
 Sulphur. . . . . 2 dr.  
 Red Mercury Sulphide. . . . . 12 grn.  
 Carbolic Acid Merck. . . . . 1 dr.  
 Ointment.

Ichthyol. . . . . 1 fl.dr.  
 Precipitated Sulphur. . . . . 30 grn.  
 Petrolatum. . . . . 4 dr.  
 Lanum. . . . . 4 dr.  
 Oil Rose. . . . . 2 drops

Apply at night and several times during the day, if possible. Clip hair.

Ichthyol. . . . . 90 min.  
 Precipitated Sulphur. . . . . 45 grn.  
 Tannic Acid Merck. . . . . 15 grn.  
 Zinc Oxide Merck. . . . . 5 dr.  
 Starch. . . . . 5 dr.  
 Lanum. . . . . 11 dr.

Use as inunction.

### Tinea Tonsurans

Dr. Brown, clinical lecturer at the New York Post-Graduate Hospital, states (*Post-Graduate*, XVI, p. 182) that in **tinea tonsurans** he prefers the following ointment:

Salicylic Acid. . . . . 20 grn.  
 Chrysarobin. . . . . 20 grn.  
 Ichthyol. . . . . 1 dr.  
 Lanum. . . . . 2 dr.  
 Petrolatum. . . . . 1 dr.

The scalp is shaved and the ointment rubbed over the whole surface. A bandage covering the scalp is then put on carefully, this being important to avoid any possible chance of the chrysarobin getting in the eyes. At the end of three days the bandage is removed, the head washed, and some emollient salve applied to check the dermatitis which is usually set up. At the end of a few days the treatment is resumed if necessary.



### Urticaria

Dr. Lanz, in the *Med. Week* (1894, p. 44), recites that his personal experience has proved Ichthyol to be an efficient internal means of treating **urticaria** of alimentary origin. Having developed a violent eruption of urticaria, in consequence of drinking lemonade, and failing to obtain more than temporary relief from taking a dose of 3 grains of menthol twice a day, it occurred to him to try a cachet containing 3 min. of Ichthyol. Within half an hour the urticaria completely disappeared. For additional safety, Dr. Lanz took also, on the following day, 3 min. of Ichthyol after each of the two principal meals, and since then there has been no recurrence of the affection.

"For an extended **urticaria**, . . . Ichthyol pure, taken in 5-drop doses three times daily, and applied also externally, established a perfect and lasting cure. . . . Treated by other physicians without success for an urticaria of several weeks' standing, Unna prescribed Ichthyol, to be employed internally and externally, and again effected a perfect cure. In neither case did any relapse occur."—(*Ther. Gaz.*, 1886, p. 704.)

"There is no remedy that I know of that can be compared with Ichthyol in **chronic urticaria**," says Malcolm Morris, F.R.C.S.E., in *Year Book of Treatment*, 1892, p. 398.

Dr. P. Scharff in a paper on Urticaria Symptomata Infantilis and Its Treatment (*Therap. Monatsh.*, Oct., 1907) states that an experience of 17 years has taught him to rely on Ichthyol, the remedy never having failed him. He finds the Ichthyol wonderfully effective in the urticaria of children, all other remedies ordinarily used to relieve the irritation, such as aspirin, antipyrine, etc., being superfluous. The best form of application was found to be a simple 5- to 10-per cent. aqueous solution of Ichthyol with 5 per cent. of glycerin added to prevent the tension which the skin ordinarily exhibits when aqueous liquids are applied. The application of the Ichthyol solution brings about, even on the same day, a decided amelioration of the annoying itch. The solution is applied twice daily to the affected parts, and potato starch then dusted on. Where it is desired to have the Ichthyol in an available form for a long period, the author uses the following formula:

Ichthyol.....	1 part
Lanum.....	2 parts
Petrolatum.....	4 parts
Dist. Water.....	3 parts

Or Unna's Ichthyol varnish may be employed:

Starch .....	40 parts
Ichthyol .....	40 parts
Liquid Egg Albumin .....	1-1.5 parts
Water .....	to make 100 parts

The Ichthyol may be given internally at the same time with advantage, in doses of 10 drops thrice daily of a 10-per cent. aqueous solution for nurslings, children 3 years of age receiving 10 drops of a 30-per cent. solution, while a five-year-old child receives 5 drops of a 50-per cent. solution thrice daily. These doses may be given without fear, and are in most cases eagerly taken, and in some cases even demanded more frequently than the prescribed number of times per day. In the few cases where the taste is objected to, the use of peppermint water and a little syrup in place of the water alone renders the remedy unobjectionable to the little ones.

In **urticaria**, only the local symptoms but not the cause can be treated with Ichthyol, says Dr. Hermann G. Klotz (*Therap. Gaz.*, Feb. 15, 1910). The results are a disappearance of the itch, particularly with mosquito bites.

Ichthyol, in from 1- to 2-grn. doses to children, and in 5- to 6-grn. doses to adults, relieves and cures. At the same time an ointment should be applied to the affected parts, and even all over the body. The strength of the ointment should be about 2 drams of Ichthyol to an ounce of petrolatum for adults (*Med. Summary*).

Ichthyol as a remedy in **urticaria** is also lauded by Dr. P. Schmitz (*Amer. Med.-Surg. Bull.*, 1895, p. 919, and 1898, p. 1072), Dr. J. Schmidt, of Berlin, Germany (*Therap. Gaz.*, 1886, p. 374), Dr. N. O. Gadde (*Therap. Monatsh.*, 1890, No. 3), Dr. Lartigan (*Le Progrès Médical*, 1887, No. 11) and Dr. Leo Leistikow (*Archiv f. Schiffs u. Trop. Hyg.*, 1898, No. 2).

### Formula for Urticaria

Ichthyol .....	2 fl.dr.
Glycerin .....	2 fl.dr.
Paint eruption every few hours. Shake well. (In <i>acute urticaria</i> )	

## Ichthyol in Gynecology

Ichthyol has for so many years been the one most prominent drug used in gynecology that to-day it needs no introduction to the specialists in this line, or even to the general practitioner who is dealing with infectious or inflammatory conditions in the region of the female genital organs. The following pages consist entirely of extracts from the best medical literature, and from the authorities most entitled to discuss these subjects. We offer what is here set forth as a reminder of the very many conditions in which Ichthyol has proved its efficiency. So valuable has Ichthyol become that in many out-patient departments it is routine practice to use it for every patient, provided none of the few possible distinct contra-indications exist. A vaginal tampon, consisting of a large ball of cotton soaked in Ichthyol of a given strength, is inserted into the vagina and left there for from twelve to eighteen hours. Ichthyol has been proved of great value as a local anodyne and as a resolvent in pelvic inflammations of every variety, being invaluable in conditions such as **pelvic peritonitis, salpingitis, ovaritis, metritis, peri- and parametritis**, and the adhesions about large fibroids. It is likewise of value in **gonorrhea, dysmenorrhea, vaginitis, cervical erosions, endometritis, and inoperable cancer of the cervix**, where it also acts as a deodorant. In the **vomiting of pregnancy** and in **puerperal fever**, besides being employed locally, it is used internally to promote the appetite and aid digestion. Ichthyol will long remain a great aid to the gynecologist and his suffering patient.

Prof. Freund (*Therap. Monatsh.*, Mch., 1910), says:

"Ichthyol is an analgesic *par excellence*, and it has established a place for itself in gynecology. Its most powerful action is that of a resorbent, in which case it is combined with glycerin. It is superior to most other resorbents, furthermore, because it kills gonococci; hence it is indicated in all true or apparently gonorrheic inflammations."

The celebrated gynecologist, Dr. Robert Bell, Physician to the Glasgow (Scotland) Hospital for Women, says (*Edinburgh Med. Jour.*, April, 1896):

"To me the effects of Ichthyol in the treatment of these at one time intractable diseases are perfectly marvellous; were I to give instances of a very small percentage of the number of cases which I have seen beneficially affected and cured by the simple method of applying Ichthyol tampons, I feel assured that operations of the serious nature necessary for the removal of diseased appendages would rapidly decrease to a considerable extent."

Dr. R. Polacco, Surgeon to the Gynecological Department of the General Hospital at Milan, records an experience of 972 cases, from which he formed the following conclusions (*Annal. di Ostetric. e Ginecol.*, March, 1891, and Aug., 1892):

"1.—Ichthyol is the most powerful analgesic remedy hitherto known and used in gynecological practice.

"2.—Ichthyol possesses an undoubtedly resolvent action in affections of an exudative character.

"3.—In its manifold effects as an **analgesic** and **resolvent** Ichthyol is the most important development of modern therapy for females."

Dr. William P. Pool (*Brooklyn Med. Journ.*, Apr., 1901) says that he has found that a solution of Ichthyol in glycerin of a strength of 10 to 20 per cent. is one of the best local remedies we have in hyperemic conditions of the tubes and ovaries, or in simple and localized inflammations of the pelvic peritoneum. Ichthyol is mildly irritant, and possesses decided analgesic properties which counteract the pain caused by the dehydrating and depleting action of glycerin. The latter, by causing a free serous discharge from the tissues, improves circulation and promotes resolution. Ichthyol is also said to cause the absorption of adhesions.

Ichthyol possesses very active bactericidal properties, and, according to Dr. Latteux, of Paris, will destroy all forms of pathogenic bacteria in a strength less than that in which it is used therapeutically. Professor Unna, of Hamburg, has also shown that Ichthyol has marked effects in relieving congestion. Owing to these two properties, Ichthyol has been favorably received by gynecologists, and is now used very widely. Prof. Pozzi has used it continuously since 1892, and has obtained excellent results. Professors Freund, of Strassburg, and Schauta, of Prague, have used it with unvarying success in uterine infections.

In the opinion of Chesner (*Brit. Med. Journ.*, Oct. 3, 1908) the therapeutic value of Ichthyol is due to its high percentage of sulphur, the latter being present in a specially

combined state, which gives it the active properties of nascent bodies. The use of Ichthyol in gynecology depends upon the properties which the drug possesses. Thus it is useful in **congestions** of all kinds; in **inflammatory exudations** in the genital region, as in **pelvic peritonitis**, **chronic parametritis**, **chronic metritis**, **inflammations** of the **ovary** and **Fallopian tubes**, **erosions** of the **cervix**, **cystitis**, the various manifestations of **gonorrhea**, and **anal troubles**.

In gynecology Ichthyol is employed as a 10-per cent. solution in glycerin. Into this fluid pads are dipped, and then applied to the inflamed tissues. Suppositories of glycerin and Ichthyol are more convenient, and prevent the unpleasantness of the physician handling the pads.

Rheinhold Herrman in his inaugural dissertation for the Doctorate in the Kaiser-Wilhelms University, Strassburg, 1892, entitled "Use of Ichthyol in Gynecology," after praising it highly and giving examples, gives statistics of 150 cases as follows:—

- 6 cases of inoperable cancer—all of which showed a lessening of the discharge and pain.
  - 22 cases of disease of uterine wall or endometrium; 11 cured—9 improved—3 no result.
  - 120 cases of disease of tissues about uterus; 59 cured—56 improved—5 no result.
- The last 120 include among others
- 13 perimetritis exudates—9 cured—4 improved;
  - 33 chronic parametritis—16 cured—15 improved—2 no result.
  - 14 fixed inflexions—all quickly made movable.

### Ichthyol in Carcinoma (Uterine)

Dr. Gustav Woyer, of Vienna, (*Wien. med. Pressc.*, 1899, No. 47 states:

"In nine cases of inoperable uterine carcinoma undiluted Ichthyol was used for cleansing the surface after the removal of the friable masses, and then a tampon impregnated with undiluted Ichthyol applied. The Ichthyol was never observed to have any corrosive action. The seat of the carcinoma, on the contrary, exhibited in a short time an excellent appearance; and where excessive secretion existed the remedy exerted a very energetic deodorant action, and checked the secretion very materially. The treatment, which must be carried out with the greatest care, gives excellent results, as it removes the fetor perfectly in from two to three days. I therefore consider the palliative treatment of carcinoma to have been greatly enhanced by the Ichthyol medication apart from the secretion-checking and disinfectant action

of the Ichthyol, and the rendering the use of morphine unnecessary, because of the analgesic effect obtained by the Ichthyol applications. This effect is the more valuable as it enables the strength of the patient to be preserved to a far more satisfactory extent than when large doses of a narcotic are given during painful seizures. The effect was astonishing in cases of carcinoma relapses; and this was also true in inflammatory diseases of the adnexa and peritoneum, in which as good results were obtained by the application of Ichthyol as by the administration of morphine for the relief of the pain."

Prof. Shoemaker, of Philadelphia, in his *Materia Medica and Therapeutics* (1893, Vol. II, p. 707), says:

"In uterine cancer, a 25 per cent. ointment (of Ichthyol) is said to relieve the pain and modify the course of the disease."

### Formulas for Uterine Carcinoma

Ichthyol..... 1 fl.oz.  
Glycerin..... 9 fl.oz.  
Saturate tampons and apply to cervix.

(For palliative treatment of cervical cancer.)

Ichthyol..... 30 min.  
Cacao Butter  
to make 10 vaginal suppositories.  
Introduce one suppository when pain is present.

Ichthyol..... 2 fl.oz.  
Apply freely several days after curetting.

Ichthyol..... 20 min.  
Pyoktanin..... 15 grn.  
Lanum..... 135 grn.  
Cacao Butter..... 135 grn.  
White Wax..... 135 grn.  
Oil Rose..... 1 drop  
Make into six ovules.  
Introduce one every other day, after vaginal irrigation. Retain in place by means of dry cotton tampon.

### Ichthyol in Dysmenorrhea

Dr. Gould, in his *American Year-Book of Medicine and Surgery*, 1893, p. 551, calls attention to a discussion on dysmenorrhea in the *Brit. Med. Jour.*, and adds this:

"Nearly all cases are benefited by rest at the period, hot vaginal douches during and between the periods, and, in inflammatory cases, tampons of glycerin and Ichthyol, and saline aperients."

### Formula for Dysmenorrhea

Ichthyol..... 1 fl.oz.  
Glycerin..... 3 fl.dr.  
Water..... to make 4 fl.oz.

Douche vagina with hot water, then apply pledgets of cotton soaked in this mixture as far up as they can be retained. Change every other day.

(In ovarian dysmenorrhea).

## Ichthyol in Endometritis

Prof. Edgar Kurz, director of the Chirurgico-Gynecological Polyclinic at Florence, referring to his experience in the use of Ichthyol, has the following to say (*Deut. med. Wochenschrift*, 1891, No. 43):

"Externally, pure Ichthyol was rubbed in over the abdomen; locally, tampons saturated with 10- to 20-per cent. Ichthyol-glycerin were employed; and internally, three to five Ichthyol pills, containing  $1\frac{1}{2}$  minims each, daily. In some cases undiluted Ichthyol was also applied to the vagina and the vulva; but not repeated in rapid succession, as the vagina then easily gets too dry, thereby rendering introduction of the speculum difficult. In endometritis the uterus was first dried, and then pure Ichthyol was applied by pencil covered with cotton. The results were decidedly superior to what could have been expected from any other remedy thus far employed for similar purposes."

Dr. P. L. Kötschau, of Cologne, has used Ichthyol in aqueous as well as glycerin suspension. He found the latter more prompt. He says (*Volkmann's Sammlung klinischer Vorträge*, 1891, No. 31):

"The out-patients were ordered to apply tampons soaked with 10-per cent. Ichthyol-glycerin, to be renewed once every 12 to 24 hours; the vagina was washed with warm boiled water before introducing a fresh tampon. The patients called at the clinic two or three times a week, when the parts were each time thoroughly cleansed and pure Ichthyol applied. In eight severe cases of **cervical catarrh** this treatment gave more satisfactory results than any other. Besides, 27 cases of **chronic endometritis** were cured by means of intra-uterine applications of Ichthyol. Of 48 cases of inflammation of the adnexa, 42 were cured by painting with Ichthyol and then introducing tampons two or three times a week. Sometimes baths and lotions were also prescribed."

Dr. Albertoletti, physician to the Maria Vittoria Hospital at Turin, has used Ichthyol in **endometritis**, mostly mixed with equal parts of glycerin, and applied by means of a Braun's syringe. He says (*Giornale della R. Accademia di Medicina*, 1891, No. 6):

"The medicament was always very efficacious, without causing any irritation whatever."

Dr. W. S. Bagot, of Dublin, has employed Ichthyol in his private gynecological clinic as well as in the Rotunda Hospital; he reports that Ichthyol, in glycerin and aqueous ten-per cent. solutions, was found very serviceable in the treatment of **endometritis**.

Dr. G. Bragagnolo (*Revist. Venet. di Scienz. Medich.*, XXI, No. 8) reports brilliant results from Ichthyol in gynecological practice, and recommends it in chronic painful metritis and endometritis, a 50-per cent. solution of the Ichthyol being injected directly into the cavity, while 1½ minims are taken internally five to seven times daily.

### Formulas for Endometritis

Ichthyol..... 2 fl.dr.  
Glycerin..... 6 fl.oz.

For tampons and swabbing out uterine cavity.

Ichthyol..... 4 fl.dr.  
Glycerin..... 2 fl.dr.  
Rose Water..... 2 fl.dr.

After swabbing away mucus with dry sound and thin layer of cotton upon it, paint uterine cavity with this solution, using a sound with absorbent cotton on end of it for a brush. Dilate the cervix if narrow. Make several applications at one sitting.

Ichthyol..... 2 fl.oz.  
Glycerin..... 2 fl.oz.

For swabbing uterine cavity, or for injection with uterine syringe.

Ichthyol..... 2 to 6 fl.dr.  
Glycerin..... 2 fl.oz.

For injection into uterine cavity after curetting; or instead of curetting.

Ichthyol..... 2 fl.oz.  
Distilled Water..... 2 fl.oz.  
For swabbing uterine cavity, after curetting. (In chronic endometritis.)

Ichthyol..... 1 fl.oz.  
Cumarin..... 1 grn.

For swabbing uterine cavity, for gauze uterine tampons, or for vaginal tampons.

Ichthyol..... 1 fl.oz.  
Boric Acid..... 1 dr.  
Glycerin..... 7 fl.oz.

For vaginal tampons, to be introduced every day. With secondary salpingo-oophoritis, after curetting.

### Erosions

Dr. Gustav Woyer, of Vienna, reports (*Wien. med. Presse*, 1899, No. 47) that, in four cases of erosion of the **portio vaginalis**, the application of Ichthyol for two weeks effected the formation of a new dermis and mucous membrane. Immediately after the application of the remedy the eroded parts became pallid and corrugated.

### Formulas for Erosions

Ichthyol..... 4 fl.dr.  
Glycerin..... 4½ fl.oz.

Use on cotton tampons.

Ichthyol..... 2 fl. oz.  
Paint, or for tampons.

Ichthyol..... 2 fl.dr.  
Glycerin..... 4 fl.dr.

Paint on every third day without subsequent irrigation of vagina or introduction of tampons.



### Fibroids (Uterine)

The *Amer. Med.-Surg. Bulletin* (1986, p. 457), abstracting from the *Rev. méd.-chir. des Mal. des Fem.*, gives quite fully the report of Dr. Jules Cheron. Among other things, it says:

"In certain cases of fibrous tumors of the uterus the patient suffers from extreme pains in the abdomen. These pains are often due not so much to the size of the tumor as to the adhesions that exist at the periphery of the fibroma. These adhesions are the result of circumscribed inflammation of the peritoneum enveloping the tumor. In such cases the author has obtained rapid improvement by the use of Ichthyol applied as a glyceride to the vagina, or as an ointment to the abdominal wall, and taken at the same time internally in the form of capsules. The vaginal applications are made by means of absorbent cotton saturated with Ichthyol 1 and glycerin 15. If, after a few applications, the patient complains of an irritation of the vagina and of the vulva, the author has recourse to a weaker solution of Ichthyol 1 and glycerin 20. In making the ointment the doctor advises that soft soap and extract of digitalis, both potent resolvents, be associated with the Ichthyol, and that the place of the glycerin be taken by petrolatum and wool-fat. With this ointment inunctions are made every night upon the abdominal walls, and the ointment is allowed to remain on over-night. The following morning the remedy is removed by washing with lukewarm water; if it be allowed to remain during the day also, an irritation of the skin might set in which would necessitate the suspension of these applications for some time. Finally, Ichthyol taken internally has a tonic action on the stomach, relieves arterial tension, and favors the resolution of the periuterine exudates in general, and of the perifibromatous adhesions in particular. Dr. Cheron prescribes the Ichthyol in pills each containing 0.1 Cc. (1½ minims) of the drug; one to be taken before meals."

### Gonorrhea

In the *Amer. Jour. of Med. Sciences* (Vol. CXIX, p. 436) Dr. John G. Clarke, Professor of Gynecology in the University of Pennsylvania, summarizes the most recent lines of treatment of gonorrhea in women. He says:

"In treating acute urethritis, as it is self-limiting, no injections should be employed; but if it runs into a subacute form, silver nitrate 1:1,000 solution, or Ichthyol, 1:5 to 1:100, injected into the urethra, is frequently very efficacious. Unless great force is used in injecting there is little danger of the fluid reaching the bladder, and even should it do so no serious trouble will be caused. The use of Ichthyol in the treatment of gonorrhea is comparatively recent, but the author is sure that it will appeal as thoroughly rational to all who have had occasion to use it for superficial inflammatory conditions. Neisser, after having thoroughly tested the value of the various silver salts, has at last settled upon Ichthyol as being superior to all other remedies; and in this opinion Neisser is sustained by Jadassohn and Bumm. As has been indicated, when gonorrhea once gains access to the uterus, it is exceedingly obstinate in its course, and many continue for years without any tendency to self-cure. It is sometimes a difficult question to determine whether the

cervix alone or in conjunction with the entire uterus is infected. If there are no symptoms pointing to infection of the fundus uteri, treatment should be directed alone to the cervix. To this end the os uteri should be well dilated, and it may be necessary in nullipara to make a bilateral discission. After having thoroughly cleansed the mucous membrane, silver nitrate in one- to five-per cent. solution should be applied until the mucous membrane becomes overlaid by a white coagulum. Ichthyol in five- to ten-per cent. solution may also be applied on cotton or on a small strip of gauze, and left in place for many hours; this is perhaps one of the best remedies."

Dr. E. H. Squibb, in his report in the *Trans. of the New York State Med. Assoc.* (1893, p. 352), says:

"Jadassohn, with others, reports much success in treating gonorrhea in both men and women. Thirty-seven cases of female patients gave excellent results with a solution of from 1 to under 10 per cent. He applied it both to the cervix and endometrium with great benefit. The best results were obtained in the early acute stage."

One scarcely needs to remark that blennorrhea is both frequent and troublesome in woman. Dr. Houssiau observes (*Annales de Polyclinique Centrale de Bruxelles*, Feb., 1906) that the folds and refolds, crypts and passages, are so numerous and so involved that an excellent opportunity is offered for the gonococcus to find lodgment, and antiseptics are of little service as a rule. It has well been said that it is a more dangerous disease than syphilis. Not only is blennorrhea very dangerous from the standpoint of discomfort, invalidism, and even death, but it is, unfortunately, extremely common. The treatment should be local and general. Internally the old reliable aromatic oils, such as santal, etc., retain their position, while for local treatment tamponing with Ichthyol affords the best results. Such tamponing may be continued even while the woman is pregnant. The author states that great care should be taken that the true Ichthyol is used, as within recent years a number of so-called synthetic "ichthyols" have been put on the market under various names or "synonyms," which are nothing more nor less than sulfonated petroleums. None of these substitutes has stood the test of time, as they have at times been found to be particularly irritating, and the author is emphatic in insisting on the use of the product that is derived from the bituminous shale from Seefeld, in the Tyrol, the true Ichthyol as originally introduced by Unna, and made by the Ichthyol Co., of Hamburg.

Drs. Louise Morrow and Olga Bridgman (*Journ. Amer. Med. Assn.*, May 25, 1912), in work done at the Illinois State Training School for Girls, used 25 per cent. Ichthyol with vaccine in 101 cases, and found that the time required for the germs to disappear was 1 to 8 months, the average time being 4 months; and that in those cases in which a vigorous local treatment alone has been used the results have been exactly as satisfactory as when this treatment has been combined with vaccine.

### Formulas for Gonorrhea

Ichthyol..... 4 fl.dr.  
Glycerin..... 1 fl.oz.

Apply with brush every third day, without subsequent irrigation of vagina or introduction of tampons.

(In *vaginal gonorrhea*.)

Ichthyol..... 2 fl.dr.  
Tinct. Opium..... 1 fl.dr.  
Distilled Water....to make 5 fl.oz.

Inject once daily, at night.

(In *acute gonorrhea*.)

Ichthyol..... 1 fl.oz.  
Glycerin..... 8 fl.oz.

Take up freely with thick cotton-carrier wrapped with thin layer of cotton; introduce into female urethra once daily, and then immediately remove.

(This mixture also serves for tampons, which, placed in vagina, act as partition between urethra and uterus.)

Ichthyol..... 3 to 4 fl.dr.  
Lanum..... 20 dr.

For tampons.

(In *vaginal blennorrhagia*.)

### Inflammations

The *Medical Annual* (1897, p. 402) says:

"M. Gaudiosi considers Ichthyol as a specific in the treatment of uterine diseases, as powerful in these as is quinine in malarial fevers and as mercury in syphilis. Its resolvent action facilitates the re-absorption of exudates and improves the nutrition of tissues in chronic inflammation. Its employment from the beginning of the disease promotes absorption of the parametric exudate, and it is only when an abscess has formed that operative intervention becomes necessary. Usually from seven to eight days are sufficient for the absorption of a moderate exudate. Ichthyol is at the same time an excellent local analgesic; it is strongly antiseptic, and by its constriction of the vessels it exerts an antiphlogistic action."

Dr. M. Gunsburg has used Ichthyol in over fifty cases of divers chronic inflammatory affections of the genital organs in women, accompanied by constipation and dyspepsia. He reports:

"Given in pills, each containing  $1\frac{1}{2}$  min. (0.1 Cc.), one or two being given three times daily, it acts as a mild laxative. Constipation is relieved under the influence of Ichthyol, without any accompanying colics or consequent diarrheas; at the same time, in almost every case the appetite was improved

and the pains in the lower abdomen ceased. The only inconvenience observed with Ichthyol is the disagreeable belching following its use, but this may be prevented by having the pills coated with keratin. Another point in favor of this remedy is its cheapness, as compared with such remedies as massage, electricity, and thermal or bath cures."

In 1891 Dr. Robert Bell, of Glasgow, Scotland, at the meeting of the British Gynecological Society, said:

"In the treatment of disease of the adnexa, which persists after the health of the uterus has been restored, the tampon which in my hands has proved most beneficial is one soaked in a ten per cent. solution of Ichthyol in glycerin and boric acid, the latter being employed just as in the case of the glycerite of alum, to enable the tampon to be retained for three days without becoming offensive. In Ichthyol we possess a most powerful resolvent, in **pelvic cellulitis and inflammatory disease of the adnexa**, either with or without hyperplasia. I have also seen it of immense service in promoting absorption when hematocele was present. Upon this agent great reliance is placed by me in the treatment of inflammatory affections of the pelvis and its contents. I further maintain that no one is warranted in resorting to surgery in disease of the adnexa, until he has exhausted, without success every other acknowledged method."

In an interesting communication to the *Journal de Médecine de Paris* (which was translated and published in the *New York Med. Jour.*, No. 959, p. 544), Dr. Lorain, after giving his experience in the use of Ichthyol in gynecology in his private practice, sums up his results as follows:

"1.—Ichthyol, employed for vaginal dressings, and for inunctions on the abdominal walls, exerts an analgesic action that is manifest at times even from the first dressing, and which is more marked the longer the applications are continued. That the glycerin bears little or no part in the effect is evident from the fact that in many cases where it was applied alone it was ineffectual, but alleviation was had as soon as the Ichthyol was employed.

"2.—It exerts, besides, an antiphlogistic action, it being observed that in general, under the influence of Ichthyol dressings, repeated for a variable length of time, the inflammatory lesions of the adnexa, peritoneum, and pelvic cellular tissue exhibited a marked tendency to resolution. The adnexa diminished in volume and regained their mobility, at the same time becoming less sensitive to pressure. The pelvic exudations underwent absorption, and the vaginal culs-de-sac regained by degrees their normal flexibility. In recent cases of light or medium intensity, a cure was almost always had in from three to four months. In long-standing **salpingo-ovaritis**, complicated with **sclerotic periadnexa**, intra-vaginal compression combined with massage gave excellent results.

"3.—Among the patients observed, many were affected with inflammatory lesions of the neck of the uterus, and a few even exhibited symptoms of vaginitis, that were all greatly ameliorated by the application of Ichthyol dressings.

"4.—Administered by the mouth, Ichthyol stimulates the digestive functions by its tonic action on the stomach, relieves arterial tension, and thus favors absorption of the pelvic exudations."

Charles R. Robins, gynecologist to the Memorial Hospital, Richmond, Va. (*Southern Med. and Surg.*, May, 1905) believes that in **acute pelvic inflammations** conservative gynecology can be practiced with most satisfactory results. The author's own practice has been as follows, and the results justify him in recommending it:

"The patient is put to bed and kept absolutely quiet. Hot fomentations are used on the abdomen. Copious hot antiseptic douches are given every three or four hours, and each night a vaginal cone, composed of Ichthyol and glycerin, is inserted into the vagina. The bowels are evacuated, both by salines and enemata."

### Metritis

Prof. E. Monod (*Annales de la Polyclinique de Bordeaux*, 1892, No. 11) recommends, for the treatment of metritis, tampons soaked in Ichthyol 1 to glycerin 10.

Dr. E. H. Squibb, in the *Transactions of the N. Y. State Med. Assoc.*, Vol. IX, p. 630, says that:

"Not only did Ichthyol hold its own, but has since the last report in Vol. VIII increased its sphere of usefulness. . . . Its more extended use is reported by Eschen, in the treatment of twenty-five cases of uterine complaints, including **metritis**, **parametritis**, and **inflammation of the ovaries**."

G. Bragagnolo (*Rivist. Venet. di Scienz. Medich.*, XXI, No. 8) reports brilliant results from Ichthyol in gynecological practice. He recommends it in the following conditions:

(1) **Catarrhal endocervicitis** with ulceration. A tampon is saturated with a 10-per cent. solution and left in place for 24 hours; a douche is then ordered and a new tampon inserted; (2) **chronic painful metritis and endometritis**. A 50-per cent. solution of the drug may here be injected directly into the cavity while 0.1 Gm. (1½ min.) are taken internally five to seven times daily.

### Formulas for Metritis

Ichthyol..... 1 fl.dr.  
Glycerin..... 1 fl.oz.  
For tampons.

Ichthyol..... 4 fl.dr.  
Glycerin..... 1 fl.oz.

Paint on every third day without subsequent irrigation of vagina or introduction of tampons.  
(In *cervical* metritis.)

Ichthyol..... 1 fl.oz.  
Glycerin..... 4 fl.oz.

Apply on tampons, introduced every second day into vaginal cul-de-sac.  
(In *chronic* metritis and *subacute perimetritis*.)

In addition the following internally:  
Ichthyol..... 1 fl.dr.  
Peppermint Water..... 2 fl.dr.  
Ten to twenty drops in water.

## Ovaritis

Dr. H. W. Freund, Physician to the Woman's Ward of the Strasburg University Hospital, is quoted thus by the *Therap. Gazette* (Third Series, Vol. VI, p. 619):

"Freund recommends Ichthyol as useful, both externally and internally, in a number of the diseases of women, especially those of inflammatory origin. In his hands it has proved more efficacious and more rapid in its action than any other remedy. It has also the useful effect of quickly relieving the pain that accompanies pelvic inflammations. In **chronic parametritis, chronic and subacute perimetritis, in inflammation of the tubes and ovaries, in erosions of the os, and in pruritus of the external genitals**, it is capable of bringing about a quite surprisingly rapid and complete cure. Internally, he gives the Ichthyol in doses of a minim and a half (0.1 Cc.) in pill three times a day, to commence with, and later in doubled doses. Externally, he employs a mixture of Ichthyol 5 parts and glycerin 100 parts, on tampons of cotton introduced into the vagina. When energetic absorption is demanded, he employs the Ichthyol with equal parts of lanum or with green soap (8 parts of Ichthyol and 80 of soft soap), rubbed over the abdominal walls. He also uses it in the form of suppository, 1-3 min. (0.06 to 0.2 Cc.). The results of its intravaginal application are, according to Dr. Freund, positively astounding. Thick cicatrices disappeared in the course of a few days, parametric cicatrices thinned down and became less rigid, tubal pains diminished, etc. The pain-relieving quality of Ichthyol was quite as remarkable as its very unusual one of promoting absorption. No ill effects were ever observed."

## Formulas

Ichthyol..... 4 fl.dr.  
Glycerin..... 2 fl.dr.  
Lanum..... 6 dr.

Introduce far up vagina on absorbent cotton.

Ichthyol..... 2 fl.dr.  
Boric Acid..... 15 grn.  
Glycerin..... 3 fl.oz.

Introduce into vagina on tampons every third day.

Ichthyol..... 2 fl. oz.  
Oil Rose Geranium..... 30 min.

Paint whole vagina twice a week. Afterward introduce 10- to 20-per cent. Ichthyol-glycerin tampons of wood-fiber wool, and allow to remain twenty-four hours.

Ichthyol..... 4 to 8 fl.dr.  
Glycerin..... to make 5 fl.oz.  
For tampons.

Ichthyol..... 1 fl.dr.  
Soft-soap..... 10 dr.  
For inunction into abdominal walls.

Ichthyol..... 1 fl.dr.  
Camphor..... 45 grn.  
Mercurial Ointment..... 6 dr.  
Ext. Belladonna..... 2 dr.

Rub in twice daily.  
In addition the following is used internally:

Ichthyol..... 2 fl.dr.  
Peppermint Water..... 2 fl.dr.  
Five to ten drops thrice daily.

## Parametritis and Perimetritis

Dr. Gustav Woyer, of Vienna, reports (*Wien. med. Presse*, 1899, No. 47) as follows:

"In two cases of **puerperal parametritis**, the vaginal introduction of Ichthyol-glycerin tampons produced complete relief from pain, and in a comparatively short time effected cures. In fifteen cases of chronic inflammatory diseases of the adnexa the analgesic action of ten-per cent. Ichthyol-glycerin tampons was promptly manifested. In two cases in which the Ichthyol was replaced by another remedy without the patients' knowledge, the latter were astonished at not being relieved, as they previously had been; on again employing Ichthyol, relief was promptly obtained. In cases where severe pains occur after massage in fixed retrodeviations of the uterus of old perimetric processes, an Ichthyol-glycerin tampon, inserted after massage, was found to be an excellent analgesic. This specific action of Ichthyol also afforded good service in two cases of exudation from the stump following vaginal radical operation.

"In a few of the cases the Ichthyol was used also internally, in pills of 0.1 Cc. ( $1\frac{1}{2}$  min.) each; from three to five being given daily."

Dr. P. L. Kotschau, of Cologne, has used Ichthyol in aqueous as well as glycerin suspension. He found the latter more prompt. He says (*Volkmann's Sammlung klinischer Vorträge*, 1891, No. 31):

"In 18 cases of **chronic parametritis** the tumor was pressed as far as possible downward into the vagina, and injected by means of a long needle. In cases of extensive character, 5 Cc. of equal parts of Ichthyol and distilled water were injected every two or three days; half as much in less severe instances. The exudations were invariably absorbed after five or six injections. Although the injections were not always painless, the pain soon passed off, and could readily be kept within bounds by a Priessnitz bandage."

Dr. Albertoletti, Physician to the Maria Vittoria Hospital at Turin, has used Ichthyol in **endometritis**, mostly mixed with an equal part of glycerin, and applied by means of a Braun's syringe. He says (*Giornale della R. Accademia di Medicina*, 1891, No. 6):

"The medicament was always very efficacious, without causing any irritation whatever. In **parametritis** and **perimetritis**, tampons soaked with a ten per cent. solution of Ichthyol were employed. Never was any injurious effect observed, and for this reason Ichthyol is preferable to iodine."

In an abstract of a paper by Dr. Niemirowsky, which appeared in *Merck's Bulletin* (Nov., 1892, p. 669), these statements occur:

"The author obtained excellent results with Ichthyol, and found it especially useful in chronic **para-** and **perimetritis**, as well as in **oophoritis**. In all cases a 10-per cent. solution in glycerin was employed, a plug saturated with it being introduced into the vagina and allowed to remain twenty-four hours. On removal two warm washings were performed daily, and the plug again introduced after a day or two. Besides the absorptive character of the remedy, Ichthyol is also valuable on account of its anesthetic action; so that, in the experience of the author, it was never necessary to administer narcotics during Ichthyol treatment, as the patient generally admitted an alleviation of the pain after the introduction of one or two plugs."

## Formulas for Parametritis and Perimetritis

Ichthyol..... 1 fl.oz.  
Lanum..... 1 fl.oz.

For inunction into abdominal skin.

Ichthyol..... 3 min.  
Cacao Butter..... sufficient  
Insert one such suppository at night.

Ichthyol..... 4 fl.dr.  
Oil Citronella..... 1 fl.dr.  
Lanum..... to make 3 oz.  
For inunction into abdominal skin.

Ichthyol..... 1 dr.  
Morphine Hydrochloride  
Merck..... 2 grn.  
Ext. Belladonna..... 3 grn.  
Cacao Butter to make 12 suppositories.  
Insert one evenings into vagina.

Ichthyol..... 4 fl.dr.  
Lanum..... 5 dr.  
Petrolatum..... 5 dr.  
Rub in lightly over abdomen where pain is produced upon pressure.  
(*Anodyne* in peritonitic irritations after perimetritis.)

Ichthyol..... 1 to 2 fl.dr.  
Lanum..... to make 10 dr.  
Rub into the abdominal parietes.  
(Also for massage in *chronic* perimetritis.)

In addition it has been recommended to employ:

Tampons saturated with 10- to 15-per cent. Ichthyol-glycerin every other day.

Ichthyol is quite generally stated to be indicated in all possible forms of inflammatory residua in the female genital organs (exudative indurations, chronic exudates), applied from the vagina (tamponing with Ichthyol-glycerin) as well as from the abdominal parietes (inunctions of pure Ichthyol or Ichthyol-lanum in large amount). The anodyne as well as the absorptive action, even in chronic indurations, is said to be unmistakable and pronounced.

Ichthyol..... 2 fl.dr.  
Glycerin..... to make 5 fl.oz.

Introduce thoroughly saturated cotton tampons into vaginal cul-de-sac.

Ichthyol..... 5 fl.dr.  
Cacao Butter

to make 10 vaginal suppositories

Insert one at night. Entrance to vagina to be tamponed with small piece of cotton-wool. In the morning vaginal irrigation with boiled water.

Ichthyol..... 2 fl.dr.  
Peppermint Water..... 2 fl.dr.  
Ten drops three times daily, in water.

Ichthyol..... 1 fl.oz.  
Glycerin..... 2 fl.oz.

After vagina has been freed of mucus with solution of hydrogen peroxide, introduce this upon long twisted woolen tampons, and allow to remain twenty-four hours; then follow with warm alkaline irrigation.

In addition the following is recommended as adjuvant:

Ichthyol..... 1 fl.dr.  
Mercury Bichloride..... 1 grn.  
Ext. Senna..... 90 grn.

Divide into thirty capsules.

One three times a day, after meals.

Ichthyol..... 5 fl.dr.  
Glycerin..... 90 min.  
Paint vagina.

Ichthyol..... 1 fl.dr.  
Lanum..... 10 dr.

Rub abdominal walls.

(In *exudations*. Reported especially favorable in painful inflammatory processes of Douglas's cul-de-sac and of Douglas's folds.)

Ichthyol..... 2 fl.dr.  
Distilled Water..... 2 fl.dr.

For hypodermic use. Inject twice weekly into exudate by means of hypodermic syringe. Afterwards rest in bed; fomentations.



### Pelveo-Peritonitis

Drs. Reitmann and Schönauer, assistants at Prof. C. von Braun's clinic at Vienna, report thus (*Wien. klin. Wochenschrift*, 1890, No. 33):

"Good results have been obtained in a large number of cases from vaginal tampons impregnated with a ten-per cent. solution of Ichthyol in glycerin, or from this solution painted on the affected parts. Besides, in extensive **pelveo-peritoneal exudation**, a twenty-per cent. ointment of Ichthyol with lanum or petrolatum was gently rubbed in over the abdomen; and to patients complaining of poor appetite and indigestion Ichthyol pills (1½ minim each) were given, four to ten a day. One hundred cases kept under special observation, and the results obtained, are tabulated as follows:

	CASES	COM- PLETELY CURED	MUCH IMPROVED	LITTLE IMPROVED	NO RESULTS
Pelveo-peritonitis .....	15	6	7	..	2
Parametritis .....	40	14	17	6	3
Retro-uterine exudation .....	28	10	8	7	3
Salpingo-oöphoritis .....	17	4	7	2	4
Totals .....	100	34	39	15	12

Ichthyol is most commendable for its convenience of application and its reliability."

The *Zeitschr. f. Geburtsh. und Gynekol.* (Vol. XLII, No. I, p. 106) reports as follows:

"Ichthyol has been used in **pelvic peritonitis** by Dr. C. H. Stratz, who reports having obtained excellent results. He made vaginal applications or injected dilute solutions of the remedy into the uterus, besides applying compresses to the abdomen. Ichthyol-vapor bandages, such as have been recommended by Unna for dermatological purposes, have also recently been employed in conjunction with the injections, as the impermeable coating affords the advantage of greatly reducing the odor of Ichthyol, to which many patients are sensitive."

In 1891 Dr. Robert Bell, of Glasgow, Scotland, at the meeting of the British Gynecological Society stated that:

"Upon this agent (Ichthyol) great reliance is placed by me in the treatment of inflammatory affections of the pelvis and its contents."

#### Formula for Pelveo-Peritonitis

Ichthyol .....	4 fl.dr.
Lanum .....	1 oz.
Lard .....	4 dr.

Ointment.

(In cases where painfulness and swelling persist after cessation of acute symptoms. Gentle inunction into pelvic region of abdomen every two or four hours for ten to twenty minutes.)

## Puerperal Fever

Dr. J. D. McPherson, of College Point, L. I. (*Med. Record*, LXIV, No. 11), reports remarkable results from the use of Ichthyol in five cases of puerperal fever three of which were desperate ones. In the first three cases, after irrigating the uterus with 1:4,000 sublimate solution, it was packed with moist sterile gauze saturated with equal parts of Ichthyol and glycerin, and left so for twenty-four hours; the entire procedure being repeated once a day until the temperature was practically normal and all signs of sepsis were gone. In the remaining two cases the packing was replaced by a uterine injection of 30 to 60 minims of Ichthyol diluted with an equal part of sterile water. The author concludes that Ichthyol is a valuable remedy in puerperal fever. No untoward symptoms appeared in any of the cases. The patients were stimulated with strychnine and ammonium carbonate. Instead of unpleasant symptoms arising, exactly the opposite was observed; in fact, the drug acted like a specific. Not only were the pulse and temperature reduced, rigors banished, and discharge lessened, but the patients had a feeling of well-being following the use of Ichthyol, which was a pleasant contrast to the appearance of mental and physical suffering which one often witnesses in these cases.

### Formulas for Puerperal Fever

Ichthyol.....	4 fl.dr.	Ichthyol.....	1 fl.dr.
Oil Turpentine.....	4 fl.dr.	Collargol Ointment (Credé).....	1 oz.
Belladonna Ointment.....	4 dr.	Rub in well forty-five grains over	
Mercurial Ointment.....	1 oz.	abdomen once daily.	
Lanum.....	12 dr.		

Apply freely to abdomen. (Specially where *peritonitis* co-exists.)

## Salpingitis

Dr. Freund, of Strasburg, Germany, in a report to the *Berl. klin. Wochenschrift*, 1890, Nos. 11 and 45, states as follows:

"As instances of the remarkable power of Ichthyol to cause absorption of exudations, a number of cases are cited, of which this is a typical one:

"The patient suffered from the sequelæ of a gonorrheal salpingitis, both tubes having been transformed for years into large, hard, immovable

Under the energetic application of Ichthyol the peripheral inflammatory products disappeared, the right tube entirely emptied itself, and the left could be easily made out to be free from the uterus. No less remarkable was the anodyne action of the remedy, which was especially conspicuous in inflammation of Douglas's pouch and in such cases of perimetritis as produced tenesmus ani."

Dr. Freund is careful to point out that often the pain may be too severe to be treated by intravaginal applications without previously employing locally narcotic remedies. If the conditions favored local treatment the author was accustomed to begin with a tampon of hydrated-chloral glycerole (2- to 5-per cent.) and proceed to the use of Ichthyol only after the excessive superficial sensibility was reduced. When by means of Ichthyol all exudation had then been absorbed, cicatrices softened, and the uterus rendered movable, massage was resorted to; as also, in some cases, electropathic treatment. In no case was a rational diet neglected. It is the author's opinion that every practitioner ought to try Ichthyol in inflammatory affections of women before resorting to surgical measures.

### Formulas for Salpingitis

Ichthyol.....	1 fl.oz.	Ichthyol.....	1 fl.oz.
Glycerin.....	8 fl.oz.	Oil Rose Geranium.....	15 min.
Introduce on tampons into vagina		Paint vagina three times a week.	

two or three times a week.

### Vaginitis

*La Semaine médicale* (Vol. XVII, p. 206) says:

"In cases of **chronic blennorrhagic vaginitis**, that frequently resist the most energetic remedies on account of their inability to reach the gonococci deeply imbedded in the mucosa, Dr. O. Bodenstein, of Berlin, has had successful recourse to tampons of Ichthyol and glycerin. These tampons are in the form of small balls, and are impregnated with a ten-per cent. Ichthyol-glycerin. They are inserted in a manner so as to dilate the vaginal wall. This dilatation, as well as the serous secretion provoked by the glycerin, causes the gonococci to come to the surface of the mucosa. At the end of a few days, desquamation occurs, being due to the action of the Ichthyol, and the membranous surface acquires a reddish-purple color, the papillæ become transparent, and slight hemorrhages are observed at various points on the surface. The hemorrhages are checked by means of cotton or iodoform tampons, and the vaginal walls are then touched with a silver-nitrate solution, the cure then setting in very rapidly. The writer has had occasion to employ this method in over fifty cases without a single bad result. The best time of treatment was found to be immediately before or directly after the menstrual period."

Dr. W. S. Bagot, of Dublin, has employed Ichthyol in his private gynecological clinic as well as in the Rotunda Hospital; he reports thus:

"Ichthyol, in glycerin and aqueous ten-per cent. solutions, was found very serviceable in the treatment of endometritis and vaginitis."

### Formulas for Vaginitis

#### Chronic Catarrhal

Ichthyol..... 4 fl.oz.  
Distilled Water..... 4 fl.oz.

Use on cotton tampons. Place in vagina every second day.

#### Chronic

Ichthyol..... 1 fl.oz.  
Glycerin..... 4 fl.oz.

Use on cotton tampons, once daily or every other day, after thoroughly irrigating parts with 0.25 per cent. Creolin solution used warm.

#### Acute Gonorrheal

Ichthyol..... 1 fl.dr.  
Iodoform..... 1 dr.  
Tannic Acid Merck..... 30 grn.  
Lanum..... 1 dr.  
Cacao Butter,

to make 6 vaginal suppositories

Incorporate the Ichthyol with the lanum, and admix with the cacao butter and iodoform; then incorporate the tannic acid.

Insert one twice daily, after warm douche of boric acid (one dr. to one pt.) or Creolin (fifteen min. to pt.)

### Vomiting of Pregnancy

The *Medical Annual* (1897, p. 543), under the head of "Neuroses of the Stomach," has this to say:

"Prof. F. La Torre (of Paris) maintains that the primary cause of uncontrollable vomiting of pregnancy is a complex lesion in the cervix determined by the pregnancy itself. The cervix is congested, there is venous stasis with edema, compressions of the nerves, with irritability of the muscular fiber. These morbid conditions give rise to vomiting as a reflex symptom, and consequently require immediate attention. In ordinary cases Torre recommends the application of a 20-per cent. glycerolate of Ichthyol by means of a tampon; in severe cases mechanical dilatation with the induction of labor is necessary."

In the volume of the *Annual* for 1898, p. 453, it is stated that the same author had since "successfully treated three unusually severe cases by applying the Ichthyol tampon to the cervix uteri."

*La Sem. Méd.* (1904, No. 43) reports that the treatment followed by La Torre has recently given Dr. A. Pettazzi most remarkable results in a severe case of pregnancy, where the patient had an ulcerous cervical metritis with rigidity of cervix. Tampons saturated with a 10- to 20-per cent. Ichthyol-glycerin solution were applied to the cervix, with the result that the vomiting disappeared immediately and did not return during the entire course of the pregnancy.

## Ichthyol in Genito-Urinary Diseases of Males

Ichthyol having proved so successful in gonorrhea and its complications in women, it was tried in genito-urinary practice in males also, in which practice it has now become a favorite remedy.

Its physical properties favor its employment in many ways; as a varnish, in aqueous solution or with glycerin, in bougies and suppositories made with gelatin or cacao butter, and in ointments.

The good results obtained are due to its antiseptic action, its contractile effect upon the blood-vessels, and its anti-phlogistic properties. It has been employed with success in acute and chronic anterior and posterior, specific and non-specific, urethritis, periurethral abscess, stricture of the urethra in connection with dilatation, acute epididymitis, inguinal adenitis, acute and chronic seminal-vesiculitis, and in erysipelas of the pudendal region.

The methods of employment are shown in the few following reports taken from the very extensive literature:

### Abscess (Periurethral)

Referring to the treatment of periurethral abscesses, Privat-Docent Dr. S. Ehrmann, of Vienna, is quoted thus (*Wien. med. Presse*, Vol. XXXVI, Nos. 48 and 49):

"Dr. E. resorts partly to a causal and partly to a symptomatic treatment. It is the aim of the latter to remove the painful phenomena which are produced especially during erection and micturition. For this purpose the author administers large doses of sodium bromide to reduce the erections, and an infusion of rupturewort (*Herniaria glabra*) and wormseed, taken warm, to dilute the urine. The cause of the trouble, he thinks, is best conquered by the application of a good antigonorrheic that shall penetrate into the tissues and cause absorption of the infiltrations. Of all remedies that have been recommended for this purpose, Dr. E. prefers Ichthyol. So long as the infiltrations are about the urethra and have not extended to the skin, he employs Ichthyol in the form of bougies. These he prepares from cacao butter to which  $\frac{1}{8}$  minim (0.02 Cc.) of the remedy is added for each bougie. Weak urethral irrigations may also be used to advantage if the inflammation of the remaining mucous membrane is not intense. If the infiltration has reached up to the skin, then the author makes endermic applications of Ichthyol, aided by heat, to cause absorption of the infiltration, or, if this is not possible, to hasten suppuration and cause perforation to take place before the infiltration has extended very far. He applies the remedy either as a paint consisting of a mixture of equal parts of Ichthyol, glycerin, and water, and bandaging

with a thin layer of absorbent cotton and gutta-percha tissue, or with a mull-bandage; or, as an ointment made with lanum and simple ointment covered in the same manner. When suppurative disintegration has occurred, the author also employs Ichthyol as a dressing. He prefers this remedy to iodoform, partly for the reason that its odor may be covered by the addition of 2-3 per cent. each of oil of eucalyptus and oil of citronella, and, principally for the reason that while iodoform favors the formation of granulations, it does not induce absorption of the infiltration, whereas Ichthyol does both."

## Gonorrhea

In Bartholow's *Materia Medica and Therapeutics*, 1903, p. 351, we are told that "remarkable results were claimed for this agent (Ichthyol) in the treatment of gonorrhea. A warm solution of one-half to one per cent. of Ichthyol had been used quite successfully; with this the canal may be thoroughly irrigated."

The Station for Syphilitic Diseases of the Munich Garrison, in a paper on the Treatment of Gonorrhea with Ichthyol, reports (*Sanitätsbericht über die königl. bayerische Armee* for the period April 1, 1889 to March 31, 1891) that:

"The exhaustive investigations prove that it (Ichthyol) belongs among the few remedies that rapidly and surely destroy the gonococci without at the same time increasing the inflammatory-catarrhal process, or injuring the mucous membrane. Irrigations were made twice daily with a 3-per cent. Ichthyol solution, and never gave rise to any unpleasant by-effects, while the anti-gonorrheic effect was undoubted. Ichthyol, in acute gonorrhea, is a promptly effective remedy, and even in chronic cases will afford good service where other remedies are useless."

## Formulas for Gonorrhea

Ichthyol.....12-60 grn.  
Dist. Water.....to make 3 fl.oz.  
Inject into the urethra.

Ichthyol.....12-60 grn.  
Bismuth Subnitrate.....40 grn.  
Dist. Water.....to make 3 fl.oz.  
Inject into the urethra.

## Gonorrheic Epididymitis

For the last two years Caesar W. Philip, of Hamburg (*Muench. med. Woch.*, LIV, p. 2034), has had good results treating gonorrheic epididymitis in which pure Ichthyol was tried in a large number of cases. The method of application was as follows: The diseased half of the scrotum, including the skin over the cord up to and beyond the

inguinal ring, is painted liberally with pure Ichthyol and then covered with a moderately thick, folded piece of cotton. The usual snugly fitting suspensory is then applied. Since the skin over the cord and that of the scrotum form a firm sheath, a dragging of the testicle with the diseased epididymis is impossible. It is sufficient to cut short the hairs over the scrotum; shaving is not necessary. After four to five days the bandage is dissolved off with warm water and a new one applied.

In this affection Ichthyol again demonstrated its properties as an antiphlogistic and absorbing agent to a marked degree. The infiltration disappears rapidly, and the patients no longer complain of pain, even though they follow their vocation. The final result is very favorable. The infiltration remaining in the epididymis was very slight and sometimes absent altogether. The neuralgic pains in the testicle and epididymis disappear very promptly. The results were especially brilliant in the case of a patient who had three recurrences until Ichthyol was used.

In conclusion it may be mentioned that only the Ichthyol of The Ichthyol Co. of Hamburg was employed. The prompt action of this preparation has been demonstrated for years at the clinic of Dr. P. G. Unna, and only disappointing results were obtained with substitutes.

### **Prostatitis**

The success which has attended the therapeutic employment of Ichthyol in gynecology, by virtue of its anesthetic and vascular contractive properties and its absorbent action, has induced Dr. P. Scharff, of Stettin (*Merck's Bulletin*, 1892, p. 669), to experiment with it in prostatitis. A small syringeful of a ten-per cent. aqueous solution was injected rectally, three or four times daily, and always with the most satisfactory results. The inflamed and swollen glands, that in many cases had rendered the rectum impassable, returned completely to their normal size, and entire absence from pain was reported. In forty cases in which this treatment was adopted not one instance occurred

in which an abscess was formed—which is a strong recommendation for Ichthyol.

### Formulas for Prostatitis

#### Acute

Ichthyol..... 2 fl.dr.  
Ext. Belladonna..... 2 grn.  
Cacao Butter,  
    Make into 12 suppositories.  
    Introduce two or three daily, after stool.

Ichthyol..... 30 min.  
Ext. Hyoscyamus..... 6 grn.  
Ext. Opium..... 4 grn.  
Cacao Butter,  
    Make into 6 suppositories.  
    Insert one every six hours. (In severe *vesical tenesmus*.)

#### Chronic

Ichthyol..... 4 fl.dr.  
Distilled Water... to make 5 fl.oz.  
    An Oidtmann's syringeful per anum three or four times daily.

Ichthyol..... 30 min.  
Iodoform..... 30 grn.  
Ext. Belladonna..... 2 grn.  
Cacao Butter,  
    Make into 6 suppositories.  
    Insert one at bedtime.

Ichthyol..... 5 min.  
Cacao Butter..... 30 grn.  
Powd. Opium..... 1 grn.  
    Make ten such suppositories.  
    After irrigation of rectum, introduce one suppository twice daily (especially at night).

Ichthyol..... 3 fl.dr.  
Lanum..... 10 dr.  
Cold Cream..... 20 dr.  
    Inject into rectum with salve syringe.

Ichthyol..... 1 fl.oz.  
Distilled Water..... 1 fl.oz.  
    Add teaspoonful to starch-enema, to be given preferably with Oidtmann's syringe.

Ichthyol..... 30 grn.  
Methylene Blue..... 10 grn.  
Morphine Sulphate..... 2½ grn.  
Atropine Sulphate..... 1/15 grn.  
Iodoform..... 5 grn.  
Cacao Butter..... 200 grn.  
    Make into 10 suppositories.  
    Use one twice or three times a day.

### Stricture

Dr. S. T. Rucker, of Chattanooga, Tenn. (*Amer. Med.*, May 14, 1904), reports obtaining uniformly good results in stricture, gonorrhea, and gleet, by packing the urethra with a soft spun cotton cord saturated with the following solution:

Ichthyol..... 40 grn.  
Resorcinol..... 40 grn.  
Balsam Peru..... 4 dr.  
Castor Oil..... to make 4 oz.

### Urethritis

Dr. V. F. Mueller, of Milwaukee, Wis., reports as follows (*Jour. Amer. Med. Assoc.*, Vol. XXXII, p. 651):

"In chronic anterior urethritis, if stricture is present, sounds are passed until fully dilated, beginning with 22 or 24 French. If these cannot pass,



meatotomy must be performed. Copious irrigations with permanganate solution, 1:12,000, gradually increased to 1:2,000, are used daily. If foci of inflammation are found they are treated with a few drops of a 5- to 10-per cent. solution of Ichthyol in glycerin by means of a deep urethral syringe or by direct application of the same solution of Ichthyol through a urethroscope. If the urethra is hypersensitive, injections of a 2-per cent. solution of Ichthyol in water may be employed to great advantage. A cure is effected in from two to six weeks. In chronic posterior urethritis the urethra should be examined for inflammatory areas, infiltration-erosions, and ulcerations, by means of the endoscope, urethrometer, olive-point bougie, or sound. If the urethra is sensitive from any of these causes Ichthyol is especially indicated. The entire anterior urethra is thoroughly irrigated with a 2- to 3-per cent. solution of Ichthyol as hot as can be borne. The patient is then instructed to relax the compressor muscle by trying to urinate, and the fluid will flow into the bladder, thus irrigating the entire urethra. After using this once a day for a few days the instruments will no longer give pain. Full-sized sounds are passed every third day until the urethra is fully dilated. If the prostatic portion be the seat of trouble, the prostatic dilator should be employed, and injections of a hot 2- to 3-per cent. solution of Ichthyol be passed into the rectum by a reflux rectal tube. Epididymitis and acute prostatitis are contraindications for the use of instruments, but the Ichthyol injections can be given with brilliant results. If foci of inflammation do not subside, then instillations of 5- to 10-per cent. of Ichthyol are to be made directly to the point of localization. Should the discharge continue three weeks, permanganate solutions should also be used. By such treatment the most obstinate cases can be cured in from five to eight weeks, at which time no gonococci should be found."

### Formula for Urethritis

#### *Acute*

Ichthyol .....	1 fl.dr.
Glycerin .....	1 fl.oz.
Distilled Water .....	to make 8 fl.oz.
Inject warm four to six times a day, retaining fluid three minutes.	

## Ichthyol in Ophthalmology, Laryngology, and Otology

Finding that Ichthyol was so potent in subduing gonorrhea in both male and female, it was but a simple logical step to try it in gonorrheal ophthalmia, and then in other inflammatory conditions of the eye. Very soon its effectiveness in various eye conditions came to be recognized by various ophthalmologists, as well as by other members of the profession who are frequently called upon to treat such cases.

In the fields of laryngology and otology the usefulness of Ichthyol as a remedy has likewise been conceded, though here it seems to have been a little slower in winning enthusiastic friends than in some of the other medical specialties.

### Angina (Catarrhal), Etc.

The *Therap. Gazette* (Vol. VII, p. 416) says that the different forms of angina yield very nicely to a solution of Ichthyol. Unna employed it in **angina catarrhalis**, **angina follicularis**, and **angina phlegmonosa**; he claims for the drug the property of aborting abscess of the tonsil just as readily as a preparation of sulphur will cut short the formation of a furuncle.

### Formulas for Angina

Ichthyol.....	30 to 60 min.	Ichthyol.....	1 fl.dr.
Water.....	2 fl.oz.	Sodium Chloride.....	30 grn.
Peppermint Water.....	2 fl.oz.	Water.....	6 fl.oz.
Glycerin.....	1 fl.dr.	Douche and gargle several times a day.	
Use as gargle.		(In hyperemia and swelling of the mucous membrane of the nose and throat).	
(In catarrhal sore throat, laryngitis, pharyngitis, and bronchial asthma.)			

### Blepharitis

Dr. Darier reports (*Amer. Med.-Surg. Bull.*, XII, p. 137; *La Clin. Ophthal.*, No. 3, 1897) having used Ichthyol in various kinds of **blepharitis**, and particularly in the extremely obstinate strumous kind that had resisted all other

medication. He used the remedy in the form of an ointment (Ichthyol 1, starch 20, zinc oxide 10, petrolatum 50) applied to the conjunctiva morning and evening. This was found to be superior to red-precipitate ointment, although it did not always yield a complete cure. Great relief was experienced by the patient during its use. But, when its employment was suspended, the blepharitis again broke out with sufficient intensity to require renewed application of the remedy. The ointment is not so effective in very resistant and severe forms in which the eyelids are tumefied, very red, sometimes with ectropion and secretive conjunctivitis, such as are most commonly encountered in strumous subjects. In these cases undiluted Ichthyol was applied, spread on a small piece of linen laid directly on the half-closed eye at bedtime, the dressing being removed the following morning, when after cleansing with a boric-acid wash, the eye appeared less red and the eyelid less turgid. This treatment gave great satisfaction in a large number of cases in which the classic form of treatment was ineffective.

The writer states that Ichthyol, applied as above, has a very marked antiphlogistic action. It rapidly diminishes the infiltrations of the tissues; the redness disappears, but it appears to augment rather than diminish the conjunctival secretion, for which reason silver nitrate was usually used in conjunction with it.

For the purpose of general medication, Ichthyol in the form of pills each containing 0.1 Cc. ( $1\frac{1}{2}$  min.) was found to be best, the dose being four daily. The granules advantageously replaced the cod-liver oil and sulphur preparations that are so valuable in the affections to which persons of a scrofulous or lymphatic temperament are subject. In résumé, the writer states that Ichthyol is a valuable agent in the treatment of all ocular affections resulting from lymphatism in general. It is indicated whenever there is any infiltration of the tissues with more or less intense congestion. It appears to be most particularly useful in **strumous blepharo-conjunctivitis**.

The *Amer. Year-Book of Med. and Surg.* (1897, p. 944) states;

"Luciani advocates the use of Ichthyol ointment in the treatment of *scrofulus blepharitis*; and the *Therap. Monatsh.*, Vol. X, p. 627, says that the same author lauds Ichthyol for the excellent results obtained by its use in *blepharitis*, *conjunctivitis*, and *phlyctenular keratitis*, *simple or catarrhal conjunctivitis*, and even in *scleritis*. He employs a 1- to 10-per cent. wash and a 2.5- to 10-per cent. ointment. According to the writer, the Ichthyol in these cases possesses antiseptic, anodyne, and antiphlogistic properties."

Dr. Gould, in his *American Year-Book of Medicine and Surgery*, 1898, p. 833, states:

"In 3-per cent. solution or ointment Ichthyol has been found serviceable in Pana's clinic in *blepharitis* and *conjunctivitis*. Its action is astringent and antiseptic." (*Munch. med. Woch.*, Mar. 11, 1897.)

### Formula for Blepharitis

Ichthyol .....	5 min.
Zinc Oxide Merck .....	1 ½ dr.
Starch .....	1 ½ dr.
Petrolatum .....	4 dr.
Apply night and morning.	

## Coryza

In an article on the use of Ichthyol in diseases of the upper respiratory tract Dr. Lewis S. Somers, of Philadelphia, Pa. (*Merck's Archives*, V, pp. 294-299), states that:

"In *coryza* Ichthyol is of value in the later stage, when the secretion is composed of thick mucus or becomes mucopurulent in character, the Ichthyol being used by the patient once or twice daily in the form of an ointment. After the nose has been cleansed, a small particle of ointment is placed in each nostril; the results appear to indicate that it shortens to some extent this stage of the coryza. It may be used in from 1- to 5-per cent. strength with petrolatum as a base; and this has seemed about as satisfactory as the more elaborate ointments for the same purpose. The odor may be disguised by cumarin, ½ grn. to the dram. In cases where the coryza seems somewhat persistent the following formula has been productive of considerable benefit by stimulating the mucosa to more normal activity:

Ichthyol .....	8 min.
Ointment Zinc Oxide .....	1 dr.
Petrolatum (or Lanum) .....	3 dr.

"Following repeated attacks of coryza, if the turbinated tissue becomes the seat of hypertrophic change, Ichthyol will often give considerable relief to the patient by its alterative action upon the parts, when there is not present a sufficient degree of hypertrophy to warrant operative measures.

"Various alkaline washes are used to remove the mucus usually present, but considerable satisfaction can be derived from the ordinary normal salt-solution to which has been added Ichthyol in the proportion of five minims

to the ounce of the former. The nasal chambers are thoroughly cleansed with this solution, which allows the dilute Ichthyol to come into contact with the various recesses which otherwise could not be reached by ointments or pigments; and after all the mucus has been removed in this manner, the parts are dried with cotton tufts so far as possible. Following this procedure the hyperplastic areas are covered with a thin layer of zinc-oxide Ichthyol ointment, as previously mentioned, but containing a larger proportion of the latter drug (usually 10 to 15 minims to the half-ounce) to which is added 1 or 2 drops of oil of bergamot. This has also proved of value in cases where the tissues of the nasopharynx are swollen and chronically congested, and quite favorable results may thereby be obtained."

The *Deut. Med.-Ztg.* (1887, No. 59) makes these statements.

"In the hands of Dr. M. Lorenz **coryza** was benefited by 1- to 10-per cent. Ichthyol ointments with petrolatum, which were applied to the nose both externally and internally. Pain was always alleviated, and the course of the trouble hastened toward cure."

The *Rev. de Thérap. méd.-chirurg.* (Vol. LXV, p. 421) says that:

"Dr. Ciegiewicz recommends the employment of Ichthyol, in the form of 2-per cent. cold inhalations, in **acute laryngeal catarrh**, made twice a day. The inhalations must not be too profound, in order not to excite nausea or vomiting. The results obtained by this means are described as very satisfactory; under its influence the hoarseness and the painful cough rapidly disappear. The author's observations were carried out on both adults and children. Among the latter the Ichthyol was employed a number of times in **false croup**, and always with excellent results. The inhalations were very well borne by all the patients, who rapidly became accustomed to the taste and odor of the Ichthyol. No untoward by-effects were ever observed."

The *Annual of the Universal Medical Sciences* (1890, Vol. V, p. A 80) reports as follows:

"Von Hoffmann and Lange, in giving the results of a long experience with Ichthyol, find it especially applicable in **catarrh** of the mucous membrane. In the rapid growth of children, when scrofulosis is localized in the nose, with **ozena**, Ichthyol, locally and internally, acts much more quickly and certainly than cod-liver oil."

Dr. Hobart A. Hare (*Practical Therapeutics*, 1905, p. 738) says:

"After the crusts have been softened by spraying with a dilute hydrogen peroxide and then removed by the use of a warm alkaline spray, Ichthyol should be applied, either pure, or diluted one-half with water or liquid petrolatum, by means of an applicator. Often a much weaker solution of Ichthyol will do equally well. An ointment consisting of Ichthyol 40 grains, menthol 5 grains, and white petrolatum 1 oz. may be made also, a piece of the ointment to be inserted into the nostril, after using a douche, each night."

## Formulas for Coryza

Ichthyol.....	1 fl.dr.	Ichthyol.....	5 min.
Lanum.....	5 dr.	Zinc Oxide Merck.....	45 grn.
Cumarin.....	3 grn.	Starch.....	1 dr.
Introduce into nose on cotton swab; also anoint nose externally, rubbing in well.		Lanum.....	2 dr.
		Snuff up or introduce by means of cotton swab. (In <i>chronic Coryza</i> .)	

## Eczema (Ocular)

In the treatment of **eczema** of the conjunctiva, lips, nostrils, external genitals, or any portion of the body bordering on the mucous membranes, Dr. von Sehlen (*Monatsh. f. prakt. Dermat.*, Vol. XIX, p. 1) has found Ichthyol superior to every other remedy.

In eczema of the conjunctiva he has employed the following soft ointment with very beneficial results:

Ichthyol.....	6 to 14 min.
Wheat Starch.....	5 dr.
Zinc Oxide.....	5 dr.
Petrolatum.....	13 dr.
Make into a smooth ointment.	

This ointment should be applied to the conjunctiva by means of a small glass rod. In addition Dr. von Sehlen has the lids covered, over-night, with a piece of Ichthyol-zinc ointment-mull. In light cases of conjunctivitis this ointment-mull is of itself sufficient to effect a cure, especially if Ichthyol be lightly rubbed into the lids before applying the mull.

Prof. H. Pagenstecher of Wiesbaden (*Jahresb. d. Augeneilanstalt*, Wiesbaden, 1900) has employed Ichthyol in disorders of the eye with very gratifying results. Two epidemics of eczema first suggested the remedy. The eczema, of the impetiginous and malignant variety, attacked neglected children and led to affections of the conjunctiva and the cornea. The eczematous areas were first cleansed and then covered with pure Ichthyol. The local irritation is slight, and dressing therefore unnecessary. The removal of crusts is, on the other hand, very important, prior to applying the Ichthyol.

Ichthyol applied to the eye directly by means of a glass

rod, the patient holding the lids half-closed, is particularly valuable after operations for cataract.

Dr. Darier reports (*La Clin. Ophthal.*, No. 3, 1897) that Ichthyol is a valuable agent in the treatment of all ocular affections resulting from lymphatism in general, and that it is indicated whenever there is any infiltration of the tissues with more or less congestion. In eczema of the eyelid an ointment of Ichthyol should be used, and it will be found useful to exhibit the remedy internally in conjunction with its local application.

### Conjunctivitis

The *Med. Week*, Vol. V, p. 58, gives a more complete account of Dr. Jacovides's experience in the use of this remedy as follows:

"Dr. J. uses the Ichthyol either in a simple aqueous solution, avoiding glycerin, which might prove irritating to the eye, or as an ointment with petrolatum. Both the solution and the ointment are made strong or weak, according to circumstances. The solutions are applied to the conjunctiva with a brush in the same way as silver-nitrate solutions are applied. The conjunctival culs-de-sac are previously cleansed with some antiseptic lotion, first the upper, then the lower, eyelid being everted and kept in position by the thumb and index-finger of the left hand, and the whole of the surface of the palpebral conjunctiva brushed with either the weak or the strong solution. Then slight massage is performed for a few moments, with the soft part of the little finger, in cases of simple conjunctivitis. It may be prolonged for a minute or more in cases of trachoma. Lately, any excess of the medicated solution is removed by means of a pellet of soft cotton-wool. These applications are repeated daily or every other day. They give rise first of all to intense hyperemia of the conjunctiva, with pricking and occasionally pain; but all these phenomena disappear within from fifteen to thirty minutes, the eye becomes even less congested than before, and the patient experiences a feeling of relief. Ichthyol ointment is applied by means of a brush or spatula. A small quantity, the size of a pea, is deposited in the inner angle of the eye, and it is made to diffuse in all directions by gently moving the eyelids. The patient himself soon learns the way of applying the ointment, which produces much less reaction than the solution. As a rule, the treatment was first begun with the solution and was then followed up by the ointment. In inveterate cases the two preparations may be employed simultaneously, the eyelids being brushed with the solution in the morning and with the ointment in the evening.

"In this way Dr. Jacovides has come to the conclusion that Ichthyol can be used with advantage in all forms of conjunctivitis and of blepharitis. It exerts on the inflamed tissues a complex reaction, being a vaso-constrictor, an anodyne, and an astringent. The results, however, are particularly favorable, and often superior to those obtained by other means of treatment, in cases of phlyctenular and of catarrhal conjunctivitis, both acute and chronic,

and also in **blepharitis**. It has proved fairly useful in cases of **purulent conjunctivitis** in adults and children of a certain age, but in **ophthalmia neonatorum** it showed itself inferior to the usual treatment by cauterizations with a 3-per cent. solution of silver nitrate, or to free lotions with the potassium or calcium permanganate. In cases of **trachoma** Ichthyol did not prove equal to copper sulphate. In inveterate cases of **granular conjunctivitis**, with corneal opacity and pannus, a slow, but considerable, clearance of the cornea was obtained. The strong solution of Ichthyol was applied every day, combined with scarifications and the daily use of the stronger ointment."

Dr. Darier states (*La Clin. Ophthal.*, No. 3, 1897) that Ichthyol appears to be most particularly useful in **strumous blepharo-conjunctivitis**.

The *Internat. Med. Annual* (1898, p. 153), under the head of "Diseases of the Conjunctiva," reports thus:

"Germani (*Gaz. degli Ospedali*, June 20, 1896) finds that collyria containing from 1 to 3 per cent. of Ichthyol are very useful in this affection (**phlyctenular conjunctivitis**); and also in **catarrhal conjunctivitis** Ichthyol is well borne, eases the pain, and hastens the cure."

The same work in the volume for 1900, p. 205, states:

"M. Eberson, of Tarnow, recommends Ichthyol for the treatment of **catarrhal conjunctivitis**, and claims that it is a powerful remedy for clearing up old corneal scars. He uses the drug in 30- to 50-per cent. aqueous solution, with the addition of a little glycerin, or in a 5-per cent. ointment."

A still later report from Eberson (*Klin.-therap. Wochenschr.*, Vol. V, No. 18) cites the clinical histories of fifteen cases of eye-diseases in which he had used Ichthyol. Among these were eight cases of **trachoma**, two of **catarrhal ophthalmia**, one of **conjunctival catarrh** complicated with corneal ulcers, one of **catarrhal corneal ulcer**, etc., in which the remedy was used with great success. His results are summarized as follows:

(1) Ichthyol is a sure remedy for **trachoma**, the duration of the disease being decidedly shortened, and a reliable cure being attained. (2) The treatment with Ichthyol is particularly recommended for children. (3) Ichthyol brings about the cure of **conjunctival catarrh**, with or without corneal complications, in the shortest time possible. (4) Ichthyol is a powerful remedy for clearing **corneal cicatrizations**.

### Formulas for Conjunctivitis

#### *Croupous*

Ichthyol..... 15 min.  
Distilled Water..... 12 fl.dr.  
Camphor Water..... 12 fl.dr.

Instil one drop into eye, and apply as lotion three times a day.

#### *Granular*

Ichthyol..... 4 fl.dr.  
Water..... 4 fl.dr.  
Swab everted lids once daily.



### Furunculosis of the Ear

Furuncles of the external auditory meatus, though a simple complaint, are extremely painful and often very obstinate to treatment. F. Bruch, of Sechenheim (*Muench. med. Woch.*, 1909, No. 50), recommends applications of Ichthyol. A small pledget of cotton-wool is impregnated with equal quantities of Ichthyol and glycerin and introduced into the meatus, followed by a second pledget of dry cotton-wool to prevent any of the solution running out. Care must be taken to prevent the pledgets from exercising any pressure, otherwise the pain would be increased. The application may be renewed once a day, or in very painful cases night and morning, and the treatment should be continued until the desiccation of the furuncle is complete. If the furuncle breaks, the cotton-wool impregnated with Ichthyol prevents further infection of the meatus inward, and there is no fear of setting up eczema of the passage, such as not infrequently occurs with other moist applications or instillations of glycerin and carbolic. In cases in which it may be necessary to incise the furuncle the Ichthyol application forms a suitable subsequent dressing.—(*The Hospital*, Jan. 8, 1910.)

### Herpes Zoster (Ophthalmic)

Prof. H. Pagenstecher (*Jahresb. d. Augenheilkunst*, Wiesbaden, 1900) reports a case of painful **herpes zoster ophthalmicus** in which Ichthyol afforded brilliant results.

### Keratitis

Dr. Darier reports (*La Clin. Ophthal.*, No. 3, 1897) that in cases of **strumous vascular keratitis**, resistant to all other treatment, very good results were obtained on introducing into the conjunctival cul-de-sac an almost imperceptible quantity of undiluted Ichthyol. In résumé, the writer states that Ichthyol is a valuable agent in the treatment of all ocular affections resulting from lymphatism in general. It is indicated whenever there is any infiltration of the tissues with more or less intense congestion.

Luciani (*Therap. Monatsh.*, X, p. 627) lauds Ichthyol for the excellent results obtained in a number of ocular affections, amongst others, **phlyctenular keratitis**. He employs a 1- to 10-per cent. wash and a 2.5- to 10-per cent. ointment. According to the writer, the Ichthyol in these cases possesses antiseptic, anodyne, and antiphlogistic properties.

Dr. Theobodoff reports (*Rev. de Thér.*, LXIX, No. 23) having brought about a prompt cure in several cases of **keratitis** by means of Ichthyol, where neither atropine nor yellow ointment nor calomel had had any effect.

### Laryngitis

Dr. Cieglewicz (*Sem. méd.*, Vol. XVIII, p. 48) states:

"Spraying the throat with Ichthyol constitutes an excellent means of treating acute **catarrhal laryngitis**, so common, yet so difficult of treatment. I employ a cold 2-per cent. solution, which is sprayed and inhaled twice daily, avoiding very deep inspirations, however, in order not to provoke nausea or vomiting. Patients soon become accustomed to the odor and taste of the Ichthyol, and the symptoms rapidly disappear. Ichthyol-sprays were found to be very useful also in a number of cases of stridulous laryngitis and false croup."

Dr. T. P. Berens, of New York, says in the *Manhattan Eye and Ear Hospital Report*, 1895, Vol. II, p. 94:

"In the pharyngitis and **laryngitis sicca**, so frequently occurring in cases of rhinitis, pure Ichthyol may be applied directly to the parts affected by means of the cotton applicator. As a rule the applications are made to the nose three times weekly, and to the pharynx and larynx only when they are excessively dry or cause much discomfort to the patient.

"After the scabbing is under control the patient should be given an ointment containing 10 per cent. of Ichthyol and 5 per cent. of eucalyptol, with petrolatum as the base; this ointment to be used as a part of the toilet twice daily, by inserting it freely into each nostril and forcibly inhaling it until it is felt in the pharynx. Of 78 cases treated by this means 38 were much improved, 24 improved, and 15 unimproved. These latter were very irregular in attendance at the hospital, frequently remaining a month with no treatment whatever. The application of Ichthyol was discontinued after two to four months, according to the severity of the disease; but the ointment, as described above, was still used as part of the toilet, to prevent a recurrence of the disease."

Dr. E. H. Squibb, in the *Trans. N. Y. State Med. Assoc.*, 1893, p. 353, says:

"Dr. L. Herz, of Pilsen, Austria, reports good results in most inflammations of the throat in which he used a 2- or 3-per cent. solution in the form of a gargle. The so-called follicular tonsillitis, however, was the only affection

which did not respond favorably. Cases of very marked inflammation, in which the tonsils and soft palate were so swollen that the mouth could hardly be opened, were relieved in twenty-four hours by the pain disappearing and the swelling subsiding."

The fact that only severe cases are treated in the Army Hospital at Pilsen makes this record the more important. According to the *Wien. med. Wochenschr.* (1893, No. 2), Dr. Herz not only ordered the patients to gargle often, but also to swallow a portion of the Ichthyol solution, so that it might come in contact with the lower parts of the throat. The Ichthyol caused neither irritation nor inconvenience to the patients.

Dr. Lewis S. Somers, of Philadelphia (*Merck's Archives*, V, p. 298), states:

"In acute laryngitis where hyperemia is marked and catarrhal symptoms are prominent, a cold 2-per cent. Ichthyol solution, used as an inhalation with an atomizer, every hour or so, will in the early stages of the disorder often succeed in aborting the disease; while in cases seen at a somewhat later period the same solution kept cold by means of ice has seemed of considerable value in diminishing the painful and most annoying cough and also in eliminating hoarseness. When the inflammatory changes assume a most acute character and are attended with the outpouring of serum into the tissues, especially of the aryepiglottic folds, the edematous changes require prompt and vigorous attention; and in the majority of these cases not dependent upon some chronic disease outside of the larynx, such as nephritis, the diminution of the obstruction to respiration and the dissipation of the edema can be accomplished by the conjoint use of the suprarenal-gland solution and Ichthyol. Depending upon the severity of the edema, the larynx is atomized, while the patient inspires rather deeply, with a solution of the suprarenal gland; and this is followed in from fifteen minutes to an hour with a 0.5-per cent. aqueous solution of iced Ichthyol; that is, the solution is made of ice water and also contains small pieces of ice placed in the atomizer. The solutions are then applied alternately to the affected areas, and in the class of cases mentioned the favorable action soon becomes apparent by the diminution of the dyspnea and the rapidly increasing comfort of the patient.

"In that form of chronic laryngitis analogous to the dry and sclerotic pharynx, and dependent upon obstructive or atrophic changes situated higher in the respiratory tract, Ichthyol is often of benefit when used in conjunction with the proper treatment directed to the removal of the cause of the disorder in the nasal chambers or pharynx," continues Dr. Somers. "Usually the daily spray of 5 minims of Ichthyol to the ounce of lukewarm water will produce a more normal condition of the laryngeal mucosa and allow the patient to eject the inspissated secretions which adhere to the parts with extreme tenacity; or, if a more stimulating effect is desired, the following spray, used daily or less often as required, has proved of considerable benefit:

Ichthyol . . . . .	10 min.
Thymol . . . . .	1 grn.
Distilled Water . . . . .	2 fl.oz.

"In occasional cases the retention of the small masses of dry secretion may be accompanied by a loss of the surface epithelium over limited areas; and then the careful application of either pure or 50-per cent. Ichthyol, limited to the affected patches, will be of further aid in rendering the patient more comfortable."

In a lengthy paper on Ichthyol in **atrophic rhinitis** and in **tubercular laryngitis**, published in the *Manhattan Eye and Ear Hosp. Rep.* (1895, Vol. II, p. 94), Dr. T. Passmore Berens speaks of the encouraging results he has obtained from the use of Ichthyol in the treatment of over eighty cases of these affections. His method of application in severe cases of the former affection is described thus:

"A large cotton tampon is saturated with undiluted Ichthyol, inserted into each nostril, and allowed to remain fifteen minutes. The patient then finds it easy to expel most of the scabs, which latter become loosened by the copious secretion produced. All the nooks and crannies, especially the spaces between the turbinated bodies and the outer wall of the nose, are then cleansed with an applicator armed with a small piece of cotton saturated with Ichthyol, using considerable pressure in rubbing, thus massaging the mucous membrane with pure Ichthyol. In less severe cases, or where the scabbing is slight, the tampon is not used."

### Formulas for Laryngitis

Ichthyol.....	90 min.	Ichthyol.....	90 min.
Water.....	to make 2 fl. oz.	Thymol.....	2 grn.
Spray with atomizer, and inhale.		Water.....	6 fl. oz.
		Spray with atomizer, lukewarm, and inhale three or four minutes three or four times daily.	

### Ozena

The *Wien. med. Presse* (1896, p. 31) says:

"Dr. M. Ertler gave Ichthyol a thorough test on ozena at the Grossmann Polyclinic, in Vienna. Ichthyol suppressed the fetor of the breath incident to this disease much more rapidly and permanently than did any other means previously employed; and the painful, dry sensation in the nose and throat was obviated. The method of treatment consisted, first, in removing the crusts by means of irrigations of lukewarm water, followed by injections of 2 or 3 syringefuls of a 2- to 5-per cent. aqueous solution of Ichthyol, and, finally, swabbing the entire affected surfaces with a cotton wad fastened to the tip of a sound or a piece of wire and impregnated with a 25- to 30-per cent. aqueous Ichthyol solution. The injections are made preferably by means of simple syringes, rather than by douches. The syringe tip is connected with a rubber tube, 4 to 5 cm. (about 2 in.) long, the end of which was inserted horizontally into the inferior fossa, and the solution permitted to gently flow through the nasal passages, the head being inclined forward somewhat and the mouth kept open, thereby avoiding the swallowing of any of the solution."

The *Annual of the Universal Medical Sciences* (1890, Vol. V, p. A 80) reports as follows:

"Von Hoffmann and Lange, in giving the results of a long experience with Ichthyol, find it especially applicable in **catarrh** of the **mucous membranes**. In the rapid growth of children, when scrofulosis is localized in the nose, with **ozena**, Ichthyol, locally and internally, acts much more quickly and certainly than cod-liver oil."

The *Wien. klin. Rundschau* (1899, No. 14) contains this report:

"Moritz Cohn, of Hamburg, in reviewing the experiences of Mosler and Uhlenhuth with Ichthyol baths in **scleroderma**, strongly advises trying this form of Ichthyol medication also in other infections. He refers to a publication from the Hygienic Institute of Greifswald University, by Abel, in 1893, regarding favorable action reported by Löffler from Ichthyol in typhoid and in **ozena**, and advising its trial in other infections likewise. The numerous favorable results originally obtained by the author with Ichthyol as an internal remedy in **phthisis** (and since then duplicated by others, as by Scarpa, Le Tanneur, Fraenkel, Branthomme, Combemale, v. Bungner, Goldberg, etc.) are referred to as supporting the advocacy of the extension of its use in the form of baths, of the utility of which in other directions—especially in that of rheumatic troubles—the author claims to have heard favorable testimony from many directions."

### Formulas for Ozena

Ichthyol..... 40 min.  
Menthol Recryst. Merck... 5 grn.  
Lanum..... 1 oz.

Cleanse nostrils with 5-per cent. solution of hydrogen peroxide or weak solution of sodium chloride. At bedtime introduce a piece of ointment as large as a bean, and snuff it back.

Ichthyol..... 1 fl. dr.  
Water..... 7 fl. dr.

Thoroughly cleanse nares, then introduce pledgets of cotton, saturated with the solution, and leave in place for fifteen to thirty minutes. After this, pledgets are removed, and oily sprays used to finish treatment.

### Pannus

Dr. M. Ebersson, in his report on the use of Ichthyol in ocular affections (*Therap. Monatsh.*, 1896, X, p. 627), found the remedy to be very reliable in cases of beginning **pannus** or **corneal affections**, inasmuch as after two or three days' application the complications invariably disappeared.

### Pharyngitis

Dr. Lewis S. Somers, of Philadelphia, Pa. (*Merck's Archives*, V, p. 297), says:

"In the acute inflammations of the pharynx, and especially when the brunt of the inflammation is borne by the soft palate, tonsils, anterior faucial pillars, and uvula, Ichthyol is often of service as an efficient gargle; and, while

there may be considerable difference of opinion in regard to the relative value of this form of local medication, I believe it to be of great use and often productive of relief from the unpleasant symptoms of such irritations. The strength of the solution for this purpose should rarely exceed 2 per cent.; and when used in this proportion either in cold or lukewarm water the latter often being preferable, there is an entire absence of the irritating and burning sensation produced by stronger solutions, and in no way is there any inconvenience complained of.

"During the later stages of an acute pharyngitis, or when the affection has resisted the usual forms of treatment and the mucous membrane is relaxed, the following gargle, used every 2 or 4 hours, will frequently restore the normal tonus to the tissues:

Ichthyol.....	90 min.
Glycerin.....	2 fl. dr.
Peppermint Water.....	4 fl. oz.
Distilled Water.....	4 fl. oz.

"This is also of service when the uvula is relaxed, but yet not permanently elongated so that a portion of the tip requires amputation. While in cases especially of a lithemic habit, where there is a constant sense of irritation referred to the pharynx, and examination shows the mucosa to be somewhat thickened, with, in addition, a passive congestion of the pillars and soft palate, the use of the formula just mentioned, in which the peppermint water has been replaced by 15 grains of carbolic acid, will often enable the patient to experience considerable relief; but, at the same time, constitutional measures must be instituted and attention given to the diet and exercise, before permanent relief of any moment can be obtained. In all these instances where gargles are used the patient of course carries out the measures at home; but where additional treatment is required at the office of the physician the various pigments previously mentioned may be applied as indicated in the individual case, or the following may be painted over the mucosa several times a week:

Ichthyol.....	30 min.
Glycerin.....	1 fl. dr.
Distilled Water.....	1 fl. dr.

"This will rapidly restore the mucosa to its normal condition, especially if used in conjunction with any other local and general measures that may be required."

Dr. Somers also says:

"Ichthyol has seemed of some service in **atrophic or sclerotic pharyngitis**, in which the patient complains of excessive dryness of the parts, and inspection shows the presence of inspissated mucus, or the parts are merely glazed and the presence of enlarged blood vessels is readily perceived. Irrespective of the cause of the pharyngeal condition, the parts must be thoroughly cleansed before medication is locally applied; and after the inspissated mucus or scabs have been removed, the painting of the mucosa two or three times weekly with a solution of Ichthyol, 50-per cent. at first and rapidly increasing the strength until the pure drug is applied, will usually be of decided benefit. Of course, it is necessary, when the pharyngitis is dependent upon other conditions, either nasal or general, to remove the cause; and as the vast majority of cases of chronic pharyngitis depend upon some morbid changes in other portions of the upper respiratory tract, these must also receive careful atten-

tion before permanent results can be obtained. I have found the use of Ichthyol in this manner to be of considerable service in such conditions of the pharyngeal mucosa; and the stimulating effect produced upon the glandular system of these parts is soon made manifest by the amelioration of the annoying dryness and the increased secretion which more nearly approaches the normal, thus lubricating the mucosa and preventing the adhesion to the posterior wall of the secretion, which previously became inspissated and often resulted in the formation of crusts."

Dr. T. P. Berens, of New York, says in the *Manhattan Eye and Ear Hospital Report* (1895, Vol. II, p. 94):

"In the **pharyngitis** (and **laryngitis sicca**), so frequently occurring in cases of rhinitis, pure Ichthyol may be applied directly to the parts affected by means of the cotton applicator. As a rule the applications are made to the nose three times weekly, and to the pharynx and larynx only when they are excessively dry or cause much discomfort to the patient."

Dr. M. Ertler (*Wien. med. Presse*, 1896, p. 31) asserts that Ichthyol is the best drug for the treatment of **dry pharyngitis**, whether accompanied by *ozena* or not.

### Formulas for Pharyngitis

<i>Acute</i>		<i>Gangrenous</i>	
Ichthyol.....	90 min.	Ichthyol.....	4 fl. dr.
Carbolic Acid Merck.....	20 grn.	Carbolic Acid Merck.....	10 grn.
Glycerin.....	1 fl. oz.	Oil Rose.....	2 drops
Water.....to make	8 fl. oz.	Expr. Oil Almond.....	4 fl. dr.
Use as gargle every two hours.		Apply with brush.	

### Ichthyol in Phlyctenulosis

Dr. Wendell Reber, Instructor in Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine, in a paper presented to the Northwest Medical Society of Phila., 1898, drew the following conclusions from his experience regarding Ichthyol in phlyctenular eye-disease:

"**Phlyctenulosis** of the eye is nearly always of nasal or strumous origin; and, even when nasal, is rather to be viewed as the terminal expression of a constitutional vice. Phlyctenular affections of the eyes are peculiarly amenable to from 1- to 2-per cent. solutions of Ichthyol used jointly with hot stupes. When the phlyctenular process has been cured, correct ordering of the daily life, regulation of diet, roborants and alteratives, and attention to the condition of the upper air-passages, are all of equal importance, from the standpoint of prevention, which is, after all, the only true goal. Should one of these phlyctenulæ develop near the center of the cornea, the resulting scar would almost surely impair vision during the remainder of the patient's life; hence the importance of prophylaxis."

Dr. Theobodoff states (*Rev. de Thér.*, LXIX, No. 23) that he has employed Ichthyol in 2 per cent. ointment with cocaine in a number of cases of **phlyctena**, and that, although he used a double treatment of Ichthyol and mercury, it was always the Ichthyol that gave the better results.

### Rhinitis

Dr. H. Beaman Douglass, Professor of Diseases of the Nose and Throat at the New York Post-Graduate Medical School and Hospital, reports as follows (*Post-Graduate*, June, 1900):

"Ichthyol is, after all, a remedy which seems to give the greatest relief when used locally in cases of **atrophic rhinitis**. At a meeting of a section of Laryngologists in the Academy of Medicine, New York, this past winter, a discussion arose regarding the most useful remedy for the relief of atrophic rhinitis. The consensus of opinion among those who spoke on that occasion was very much in favor of Ichthyol in some form or other. Some used it in weak solutions, 2- to 6-per cent.; some in stronger, 25- to 50-per cent., while others preferred the use of Ichthyol pure. All agreed that in their experience it was the most valuable remedy for the relief of the disagreeable symptoms, and the best stimulant for the mucous membrane.

"It is my habit to use Ichthyol in the treatment of atrophic rhinitis in three ways: First, by means of a watery solution of 10 to 20 per cent. Ichthyol applied on a large pledget of cotton, and introduced into the nares upon the atrophied areas. As soon as the nares have been properly cleaned by any method considered desirable, the pledgets are placed in the nose and the patient is allowed to sit in the outer office for a period of fifteen to thirty minutes; after which the pledgets are removed and the oily sprays are used to finish the treatment.

"In cases of atrophic rhinitis presenting ulceration, or localities in the nose where pus is particularly persistent, or in areas that are very much atrophied, it is the author's habit to use Ichthyol in full strength, rubbed directly into the parts; particularly, if one of these bad places is upon the nasal septum. Ichthyol is used on cotton which is wound on a probe. This is gently rubbed for a period of four or five minutes directly into the atrophied mucous membrane.

"The third method of using Ichthyol is by means of salve—40 minims of Ichthyol and five grains of menthol, added to one ounce of petrolatum. This is given to the patient to use at home after cleaning out the nostril, and also each night before retiring. The patient is directed to introduce into the nostril a piece as large as a good-sized bean, and then to snuff it back, when most of the salve will be distributed over the inferior meatus, and will lubricate the nose rather thoroughly during the night, the excess of Ichthyol escaping into the post-pharynx and acting there as lubricant."

Dr. A. A. Stevens (*Modern Materia Medica and Therapeutics*, 1905, p. 330) says:

"In **atrophic rhinitis** no remedy is so efficacious as Ichthyol in relieving the disagreeable symptoms. After the nares have been thoroughly cleansed,



pledgets of cotton soaked in an aqueous solution (20-25%) should be inserted and allowed to remain for a period of from 15 to 20 minutes, or in bad cases the drug may be applied pure by means of a probe armed with cotton."

Dr. Lewis S. Somers, of Philadelphia, Pa. (*Merck's Archives*, V, p. 296) states:

"Of all the nasal affections in which Ichthyol has been used with greater or less success, in **atrophic rhinitis** it has undoubtedly proved of greatest value; and of the many measures used in the treatment of this intractable affection Ichthyol still retains the confidence of those who have used it in a fair number of these cases.

"One can hardly hope to obtain even a modicum of success in the local treatment of this affection if the chief dependence is placed upon the mere application of various remedies to the affected nasal chambers, unless the fetid secretion and scabs have been entirely removed in advance by the most thorough and painstaking cleanliness. Preparatory to the application of Ichthyol, therefore, the nasal chambers are irrigated with a warm saline solution until it comes away perfectly clear. Following this the atrophied mucosa is thoroughly sprayed with a 2- to 5-per cent. water solution of Ichthyol, which is allowed to remain for a few minutes and is followed by the application to the tissues of either pure Ichthyol or solutions varying in strength from 20-per cent. upward. The solution may be applied in one of two ways—either by thoroughly massaging the parts for several minutes; or it may be used on cotton tampons and allowed to remain for half an hour or more, when the tampon is removed. In either case follow with a protective oily spray.

"Rarely is it necessary to use the undiluted drug; but the strength of the solution desired must be governed by the conditions present in each case, the weaker solutions being usually indicated at first and the strength of the applications rapidly increased as indicated by the results that are obtained. When the drug is used in a strong solution for this purpose, that is, 40 per cent. or over, it produces a considerable serous exudate which aids considerably in the clinical restoration of the turbinated tissue and also prevents to a great extent the formation of inspissated secretion. The procedures as outlined should be repeated three or more times weekly, depending upon the severity and duration of the disease; and the patient should be instructed to carefully cleanse the nasal chambers, once or twice daily, with a warm alkaline solution, while he inserts each night into both nostrils a small amount of 10-per cent. Ichthyol salve of petrolatum or lanolin, to which have been added 5 grains of menthol crystals to the ounce; or, when scab formation seems to be fairly well under control, the menthol may be replaced by 5 per cent. oil of eucalyptus.

"In the purulent rhinitis seen especially in children, and more so in hospital than in private practice, Ichthyol has been of material service," continues Dr. Somers (*ibid.*). "After the nasal chambers have been cleansed with whatever solution may seem most desirable in the individual case, the application of a 20- to 40-per cent. solution in glycerin and water to the affected tissues will be of considerable service in aiding other measures, or, used alone, will in a considerable proportion of cases be all that is locally required. The applications of Ichthyol should be made by the physician, two, three, or more times a week, depending upon the necessities of the case; and in the intervals the nose should be cleansed twice daily, by the patient if old enough, and if not by the parents, with a 5-per cent. solution of Ichthyol in normal saline solution. In very young children this may be accomplished by means of the ordinary medicine-dropper; while in older children the best results are obtained by using

the solution in a soft rubber bulb with a tip of the same material, complete directions being given the patient that the nasal interior be thoroughly cleansed of purulent material at each washing."

### Tonsillitis (Follicular)

Dr. Somers (*ibid.*) further says that, in the acute **follicular tonsillitis** of adults, Ichthyol is undoubtedly useful as a local application; and, if diluted with from two to four parts of water, it may be painted over the tonsils with considerable relief to the patient.

The *Internat. Med. Annual*, 1899, p. 563, states this:

"Kyle recommends for tonsillitis a paint composed of 1 part Ichthyol to 2 of water, to be applied twice daily after a preliminary cleansing with an alkaline solution. It may here be remarked incidentally that this advice applies to all local treatment in the throat."

### Formulas for Tonsillitis

<i>Follicular</i>		<i>Phlegmonous (Quinsy)</i>	
Ichthyol.....	1 fl.dr.	Ichthyol.....	3 fl.dr.
Pyoktanin.....	15 grn.	Belladonna Ointment....	2 dr.
Glycerin.....	2 fl.dr.	Oil Rose.....	4 drops
Peppermint Water.....	2 fl.dr.	Lanum.....	3 dr.
Paint throat every two hours.		Apply three times daily, externally.	
Ichthyol.....	1 fl.dr.		
Oil Cade.....	1 fl.dr.		
Soft Soap.....	1 dr.		
Lanum.....	3 dr.		
Apply evenings.			

### Trachoma

Popov (*La Clin. Ophthalmologique*, Apr. 10, 1902, p. 111) employs Ichthyol in **trachoma**, allowing a 10- to 20-per cent. solution to fall, drop by drop, on the everted lids.

In the *Medical Herald* (Nov., 1899) Dr. B. F. Travis says that he used Ichthyol in an old case of trachoma in which there were corneal ulcers and pannus. He continues:

"The improvement in the ulcers was so marked that he decided to test its merits as a remedy for corneal ulcers, regardless of their cause, and he has used it in a great many cases, some of them very severe, and his results have been phenomenal. After experimenting with the drug in different strengths, he now applied about a 30-per cent. solution, diluted with glycerin and distilled water, ordering weaker solutions for home use. Ichthyol has no bad effect upon healthy epithelium, even in the stronger solutions. It is very painful for about one minute, but the instillation of a 1-per cent. solution of holocaine a few minutes before the application of Ichthyol is made renders it much more comfortable to the patients. Among the great number of local remedies in

use, Ichthyol has given the best results. Atropine is used for its anodyne effect and because it lessens the liability to iritis. Eserine is indicated instead of atropine in small, sluggish ulcers unattended by active symptoms, or in cases of deep ulcers near the margin of the cornea. In strumous cases the usual constitutional remedies should also be employed."

The *Internat. Med. Annual* for 1900, p. 205, states:

"Eberson recommends Ichthyol for the treatment of **trachoma** and **catarrhal conjunctivitis**, and claims that it is a powerful remedy for clearing up old corneal scars. He uses the drug in a 30- to 50-per cent. aqueous solution, with the addition of a little glycerin, or in a 5-per cent. ointment."

Eberson also gives his experience with Ichthyol in **trachomatous conjunctival** and **corneal** affections, in *Therap. Monatsh.* (1896, Vol. X, p. 627), as follows:

"The everted lids are thickly painted with a mixture of Ichthyol 5, distilled water 4, and glycerin 1, which is allowed to remain on for sixty to ninety seconds, and then well washed off. The slight burning sensation is of but very short duration, and disappears even before the washing is finished. The applications may be made daily, but at first it is desirable to make them every other day. A notable difference in the effects of silver nitrate and Ichthyol is that, after the application of silver nitrate, and even more after copper sulphate, a considerable secretion takes place for about twelve to twenty-four hours, accompanied by burning and at times not inconsiderable pain, whereas not even a trace of these follows the use of Ichthyol.

"There are cases of decided hyperemia of the conjunctiva involving the cornea, in which, from one cauterization to another, the patient suffers greatly. If, therefore, the Ichthyol treatment gave no better results than the remedies heretofore used, it should still be greatly preferred, on account of the absence of the painful symptoms otherwise encountered. A patient is cured by means of caustic without consideration of his personal sufferings; whereas with Ichthyol the treatment is more humane, since it immediately subdues the most tormenting symptom, the pain. Ichthyol is indicated in every stage of trachoma. In children under 10 years of age it is advisable to use a weaker solution, say about 30 per cent.

"From the results obtained the writer therefore believes that Ichthyol will occupy the first rank among remedies intended for the treatment of trachoma."

In a still later report, citing the clinical histories of 15 cases treated by him, Eberson summarizes his results thus:

"(1) Ichthyol is a sure remedy for **trachoma**, the duration of the disease being decidedly shortened, and a reliable cure being attained. (2) The treatment with Ichthyol is particularly to be recommended for children. (3) Ichthyol brings about the cure of conjunctival catarrh, with or without corneal complications, in the shortest time possible. (4) Ichthyol is a powerful remedy for clearing corneal cicatrizations."

The *Med. Week*, Vol. V, p. 58, gives a quite complete account of Dr. Jacovides's experience as follows:

"Dr. J. uses the Ichthyol either in a simple aqueous solution, avoiding glycerin, which might prove irritating to the eye, or as an ointment with petrolatum. Both the solution and the ointment are made strong or weak, according to

circumstances. The solutions are applied to the conjunctiva with a brush in the same way as silver-nitrate solutions are applied. The conjunctival cul-de-sac are previously cleansed with some antiseptic lotion, first the upper, then the lower eyelid being everted and kept in position by the thumb and index-finger of the left hand, and the whole of the surface of the palpebral conjunctiva brushed with either the weak or strong solution. Then slight massage is performed for a few moments, with the soft part of the little finger, in cases of simple conjunctivitis. It may be prolonged for a minute or more in cases of trachoma. Lately, any excess of the medicated solution is removed by means of a pellet of moist cotton-wool. These applications are repeated daily or every other day. They give rise first of all to intense hyperemia of the conjunctiva, with pricking and occasionally pain; but all these phenomena disappear within from fifteen to thirty minutes, the eye becomes even less congested than before, and the patient experiences a feeling of relief. Ichthyol ointment is applied by means of a brush or spatula. A small quantity, the size of a pea, is deposited in the inner angle of the eye, and it is made to diffuse in all directions by gently moving the eyelids. The patient himself soon learns the way of applying the ointment, which produces much less reaction than the solution. As a rule, the treatment was first begun with the solution and was then followed up by the ointment. In inveterate cases the two preparations may be employed simultaneously, the eyelids being brushed with the solution in the morning and with the ointment in the evening."

Dr. Belevitsch (*Rev. de Thérap.*, LXVIII, No. 6) has employed Ichthyol in **trachoma** in the form of instillations (10- to 20-per cent. solution in glycerin and water), after having anesthetized the conjunctiva with cocaine. The instillations are practised once or twice daily. Under this treatment diffuse infiltrations of the conjunctiva in trachoma of not very long duration disappeared in a week's time; the follicles diminished in size, and no new ones were formed. In chronic cases the purulent secretion was arrested with surprising rapidity. Even in cicatricial trachoma Ichthyol has been of value by cleansing the conjunctiva and reducing the infiltrations.

### Ulcers (Corneal)

Dr. Theodoboff (*Rev. de Thér.*, LXIX, No. 23) has employed Ichthyol in 2-per cent. ointment with cocaine in 22 cases of circumscribed infiltration of the cornea and in 6 of corneal ulcer, and in a number of cases of **trachoma**, **phlyctena**, and **blennorrhea**. The drug exercised a very favorable action, which manifested itself in a rapid recession of the inflammatory symptoms, a speedy regression of the vascular development, and a restoration of the corneal tissue with scarcely a blemish.

## Ichthyol in Tuberculosis and Pulmonary Diseases

The favorable reception which has been accorded to Ichthyol in pulmonary and other forms of tuberculous disease has undoubtedly been quite a surprise to those physicians who have hitherto looked upon Ichthyol as wholly a remedy for external use. When first tried in this class of cases no one ever expected any such results as the clinical reports attest. That it should be able to check expectoration, control night-sweats, remove dyspnea, reduce pain, increase strength, aid digestion, and provide the wan consumptive with an appetite for food was something that could not be accepted without strong proof of an experimental character vouched for by men holding a large measure of the confidence of the profession. These results could not be predicted on the mere strength of its antiseptic qualities, its astringent effects, its alterative power, or because of its large content of sulphur in soluble and assimilable form. Experience with its internal employment, however, showed that it possessed qualities not before suspected, and that nothing but clinical evidence could have revealed.

The effects of Ichthyol applied externally have all been fully studied and their causes assigned. Prof. Potter, in his *Materia Medica, Pharmacy, and Therapeutics* (1909, p. 477), tells us that when it is "used internally, it retards the disintegration of albumins and favors their formation and accumulation, checking waste and promoting assimilation without irritating the gastro-intestinal mucous membrane or interfering with digestion." He also states that upon exudations it has a remarkable effect, given internally at the same time as applied externally, promoting their absorption and promptly alleviating pain.

Prof. Bartholow, in the 1903 edition of his work on *Materia Medica and Therapeutics* (p. 350), gives us in others words the same explanation as Prof. Potter, by saying that:

"It increases assimilation and hinders retrograde metamorphosis, whereby the nutrition is improved, and the body-weight brought up to the normal level. . . . It has a decided antiseptic action, and is fatal to pathogenic organisms. It increases the volume and force of the circulation, after stimulating the primary assimilation. . . . It has a remarkable power to check waste, the urinary solids and the nitrogenous excreta being greatly diminished. Hence under its administration the body-weight increases, the income is promoted and the outgo lessened, and these important results are accomplished without in any way impairing digestion or irritating the gastrointestinal mucous membrane."

That Ichthyol has proved of such great value in the treatment of phthisis is a decided blessing; and it is evident from the reports from all sources that such members of the profession as have been using it fully appreciate this fact. We append a number of reports.

"Dr. Moritz Cohn (after an experience in over 100 cases) regards Ichthyol as being of use in increasing the strength of the organism and placing it in a favorable position to carry on a successful warfare against the bacilli of tuberculosis. He states that in advanced cases improvement often follows when cod-liver oil and creosote have failed. It possesses the advantage over cod-liver oil that it can be given in summer as well as in winter, and over creosote that it can be given in larger doses. It can be given in doses of from 2 to 50 drops, thrice daily before meals, of the mixture of equal parts of the drug and distilled water, diluted with water and followed by black coffee or lemonade. The best mode of administering it is in the form of capsules, 5 to 30 grains daily."—(*Internat. Med. Annual*, 1898, p. 417).

"Dr. L. Guido Scarpa, of Turin, Italy, reported his successful results to the meeting of the Royal Academy of his city, in 150 cases of this affection, occurring between the months of April, 1894, and January, 1895. He pointed out that from what was known of the action of Ichthyol as an astringent of the vascular system, as an antiseptic, and as a disinfectant of the digestive apparatus, it was *a priori* presumable that it would be useful in **pulmonary tuberculosis**. He employed the purest he could obtain, dissolved in two parts of distilled water, or other suitable vehicle. Of this solution he gave from 20 to 180 or 200 drops diluted with water, in the course of a day. It was well borne in all cases. No other treatment was employed beyond attention to the hygienic environment and feeding up. Of the 150 cases, 23 died; all these were in a desperate condition before the treatment was begun, but even in them the Ichthyol appeared to be of service. Of the remaining cases 17 were apparently cured; in 50 there was notable improvement; in 32 there was some improvement; in 28, up to the date of report, the treatment had produced no effect. The good effect of the Ichthyol shows itself first in the influence which it has on the symptoms produced by the local lesions—cough, expectoration, dyspnea—afterward on the general condition. Physical examination showed profound modifications of the lesions, especially in the circumscribed infiltrations of the early stage, but also not infrequently in those of the breaking-down stage. Dr. Scarpa does not attempt to decide whether Ichthyol acts only by improving nutrition, or also by direct action on the lesions, or, again, by neutralizing the toxins produced by micro-organisms, both Koch's bacillus and the staphylococci, etc., which are the causes of secondary in-

fections. He insists on the advantages which Ichthyol presents over guaiacol in the treatment of tuberculosis."—(Dr. E. H. Squibb, of Brooklyn, in *Trans. N. Y. State Med. Assoc.*, 1895, Vol. XII, p. 472).

Dr. Heinrich Fraenkel reports (*Amer. Jour. of the Med. Sci.*, Sept., 1897) from his observations upon thirty patients, that the cough was lessened, the expectoration diminished both in consistency and amount, and was expelled with greater ease, the night-sweating ceased, the general condition improved. The preparation employed is equal parts of Ichthyol and distilled water, of which 20 to 40 drops are given four times daily. To correct the taste a little oil of peppermint is added to the dose, which is taken in a full glass of water before meals. The odor and taste may cause nausea and vomiting in sensitive individuals, but without producing irritation of the stomach, so that in this case it should be given in gelatin capsules.

Ichthyol continues to be quite largely used. Drs. Combemale and Desoill (*Med. News*, Vol. LXXIII, p. 144) report that during fourteen months all the phthisical patients in the Charité Hospital at Lille were treated with Ichthyol. Observations were made upon 110 patients, who were treated with this drug to the exclusion of all other medication for periods varying from one to six months. Pills and capsules of Ichthyol were found to be the least objectionable preparations. The daily dose at the beginning of treatment was 1 Cc. (16 min.), but this was gradually increased to 4 Cc. unless diarrhea intervened which was too strong to be controlled by moderate doses of dermatol. This happened in very few instances. If these doses of Ichthyol were quickly tolerated, there was a prompt improvement in the general health of the patient, as manifested by the disappearance of night-sweats, a gain in weight and strength, a reappearance of the menses, etc.

"Le Tanneur states that he has experimented with Ichthyol for the past two years in **pulmonary tuberculosis, dry catarrh, purulent catarrh, bronchial dilatation with fetid expectoration, and acute bronchitis.** In the treatment of these affections the author obtained the best effects from the employment of this drug. In numerous cases of tuberculosis he alternated with guaiacol or creosote for several months, and obtained excellent results. Ichthyol was employed in capsules containing four grains each, and covered with a coating which enabled the capsules to pass through the stomach into the intestine

without becoming dissolved. From four to eight capsules a day were taken at meal-times. The most careful observations, says the author, failed to reveal the least inconvenience on the digestive tract. In several patients, who showed symptoms of gastric fermentation or diarrhea, these symptoms were diminished by the use of Ichthyol. In fifty cases of tuberculosis of all forms and degrees, the amelioration was manifest in forty-two cases, recovery was complete in two, and in six cases only was no benefit obtained. In the treatment of dry catarrh the dominant symptoms were the obstruction of the small bronchi by mucus, which was difficult to expel, provoked coughing, and hindered respiration, and the thickening of the mucous membrane of the bronchi, which diminished the lumina of the bronchioles and consequently also hindered respiration. In these cases the Ichthyol acted on the mucous membrane as a revulsive, freeing and gradually reducing it; the sputa became liquid and their expulsion easier. These facts encouraged the author in the employment of the drug and he continued its use in fifty cases, in which he obtained veritable success.

"In **purulent catarrh** and in **bronchial dilatation** with fetid expectoration Ichthyol gave good results; the greenish expectoration became yellow, then simply mucous; the cough diminished, and the disease gradually progressed toward recovery. The author cites two cases, which he considers remarkable, of very localized bronchial dilatation subsequent to an attack of pleurisy, in which the affection was very rapidly ameliorated by this treatment. One of the patients was completely freed from the expectoration after the consecutive employment for two months of eight capsules a day. In the acute affections of the bronchi, it was in the paroxysmal forms of the cough that Ichthyol exercised the best action. The quieting effect, says the author, which generally occurred in less than three days, indicates that this drug has a very sedative action on the bronchial reflexes. In acute bronchitis, during the period of acuity or that of development, at the time when the cough was harsh and paroxysmal, a notable diminution of the objective symptoms was observed to follow the administration of six capsules of Ichthyol a day. In the latter stage the modifications in the character of the sputa were as rapid as they were manifest. From green the sputa became yellow, then white, in from two to four days at the most; finally they diminished rapidly in quantity. Concerning the general symptoms of the patients the author thinks that the action of Ichthyol presents considerable interest. From the beginning of his experiments he observed a notable amelioration in this respect. In patients suffering from tuberculosis or catarrh, in whom the general condition was altered, there was an increase in weight of from seven to eight pounds during the first month of the treatment, in others of only four pounds, but in two-thirds of the cases there was an increase in weight."—(*N. Y. Med. Jour.*, Jan. 22, 1898, p. 136.)

Ichthyol lately received very great praise from Dr. J. E. Stubbett (*Medical Record*, LV, p. 730). At a recent meeting of the New York County Medical Society he reported that of all the drugs employed in **phthisis** at the Loomis Sanitarium at Liberty, N. Y., it had yielded the best results. To secure good effects, however, it must be administered in large doses, and in such a form as to be passed through the stomach undissolved. In this way 30 grn. could be given



thrice daily without untoward effects, except an occasional and fleeting attack of diarrhea or vomiting. The improvement was rapid, and in one month, in individual cases, there had been a gain of 8 or 10 lbs. in persons whose weight had remained stationary for a long time previously. Under its influence the sputum was more easily brought up, became more scanty, and changed from a yellow to a mucoid appearance. In some instances the expectoration had been too quickly reduced, and the patients had experienced difficulty in expectorating. It changed fetid sputum into mucoid and frothy sputum, and ameliorated the chills, sweats, and fever—*i.e.*, practically accomplished the drainage and tended to convert the functions of a pyogenic membrane into one of secreting mucus instead of pus. Ichthyol had been used in fifty-one patients. Of this number 14 per cent. had apparently been cured; 55 per cent. had been improved; 19 per cent. had remained stationary, and 12 per cent. had grown worse.

The same author a year later (*Merck's Archives*, 1900, Vol. II, p. 154) again referred to the use of Ichthyol in phthisis, as follows:

"Ichthyol is accorded some attention in the annual report of the Loomis Sanitarium for consumptives, at Liberty, N. Y., for the year ending November 1, 1899. The following is stated: 'We have continued throughout the year to use Ichthyol in a number of cases showing sepsis and more or less profuse expectoration. The greatest objection to the use of this drug is that the immense daily doses, averaging from 20 to 30 min. three times a day, preclude its employment among patients whose financial means are at all limited. Its effect in the way of changing purulent sputum is so certain as to be almost specific, and for that reason, together with the percentages of good results attained, it has been used, so far as possible, in cases advanced beyond the incipient stage.'"

John Hey Williams (*Charlotte Med. Jour.*, XIII, p. 17) states that he has used Ichthyol in several hundred cases of **pulmonary tuberculosis** quite largely, and secured favorable results in a large majority of cases. He has found that as the appetite and digestive powers increased the daily average of temperature was lowered, the night-sweats were lessened, and in the majority of cases ceased entirely; degenerative changes take place in the appearance of the bacilli, with lessened number and gradual disappearance,

the character of the cough is much modified, the expectoration becomes much easier, the character of the sputum changes from the tough, sticky, and mummular form. It becomes more fluid and more easily raised, losing its purulent character, and gradually decreasing in quantity. It is most effective in the torpid forms, and is contra-indicated and sometimes injurious where there is erethism or fever. It stimulates the appetite, favors the nutritive processes, reduces the cough, and builds up the general health, while locally it is an efficient disinfectant. With 15 to 30 minims a day the sputa are liquefied and disinfected, drying up with larger doses. It was usually administered in pills or capsules just before meals, from 15 to 45 min. a day, suspended for a while, or combined with from 2 to 5 grn. dermatol, if it produces diarrhea, as occasionally occurs. On account of its supposed power to constrict the capillaries in inflamed tissues the author has been induced to use it largely in all cases of a hemorrhagic nature, and has derived more comfort from its use than from either ergot, gallic acid, or any of the astringents. It has given great benefit also in local applications in laryngeal tuberculosis, where there are deep, ragged ulcers from breaking down of tubercular deposits.—(*Amer. Med.-Surg. Bull.*, 1898, p. 1092.)

James Burnet (*Med. Record*, LXVI, No. 8), who has made an extensive study of the therapeutic properties of Ichthyol, describes its action in thirteen cases of **pulmonary tuberculosis** of the ordinary slowly progressive type. Of this number, eleven were distinctly improved, the two failures occurring in very advanced cases. As a rule, the cough was markedly improved by the end of the first month, and this improvement was more noticeable after the second month, and was then associated with an improvement in and a diminution of the expectoration. No night sweats were seen after the fourth month, and in seven of the patients it ceased at the end of the third month. After the fourth month there was only slight cough with a scanty morning expectoration. By the end of the sixth month every one had gained in weight from three to seven pounds. Benefit from Ichthyol was also noticed in a few cases of **bronchi-**

**ectasis, chronic bronchitis, and chronic pulmonary fibrosis** of stone masons. The Ichthyol was invariably given in capsules containing four grains of the remedy. At first two capsules were given four times a day, and this was gradually increased up to five capsules four times a day. Very few showed any repugnance to the medicine, and gastric irritation was never produced; indeed, the Ichthyol was rather soothing than otherwise to the stomach. The author asserts that there is no evidence in support of the belief that the beneficial action of Ichthyol in pulmonary tuberculosis is due to antiseptic properties. It unquestionably favorably modifies nutrition, but not so much because of its contained sulphur as from the influence of the sum total of the elements composing this definite chemical compound. Ichthyol is slightly antispasmodic, and in this way it relieves cough, but its chief action is as a vasoconstrictor, and by virtue of this property it prevents further exudation and inflammation.

Dr. Schaefer (*Therap. der Gegenwart*, Nov., 1900) reports a series of some 260 cases of tuberculosis treated with Ichthyol, in which the remedy was administered in doses of 15 drops three times a day and increasing to as high as 80 drops a day. The Ichthyol was given with an equal volume of water and then mixed with warm milk. He found that the effects upon the tuberculous process were very satisfactory, the general condition being improved, the expectoration rendered easier, and the bacilli becoming reduced in number. No bad results whatever were observed from its use.

Dr. Hugo Goldman (*Wiener med. Presse*, 1901, Nos. 29-30) has treated **pulmonary tuberculosis** with Ichthyol for a period of four years. Taken internally, he says, it is readily absorbed and eliminated in the feces and urine, after making the circuit of all the organs, and also coming in contact with the lungs. An important action of the drug in the system is the diminution of albumin-decomposition, as has been demonstrated experimentally. This property of Ichthyol renders it especially valuable in a disease like tuberculosis, with its obstinate loss of appetite. Another

effect of the drug is the constriction of blood-vessels, which accounts for its hemostatic, analgesic, and antiphlogistic actions. All who have used Ichthyol internally in phthisis pulmonum are unanimous in their favorable reports.

Most authors have administered the remedy half-diluted with water. Dr. Goldman found that a combination of Ichthyol with creosote carbonate is more satisfactory, especially as a stimulant for the appetite. Under that treatment, the number of bacilli in the sputum was diminished. Patients gained in weight, and some were completely cured. Of course, such favorable results could only be obtained before the formation of cavities in the lungs had begun. The following prescription illustrates the author's combination:

Creosote Carbonate.....	½ oz.
Alcohol.....	enough to dissolve
Ichthyol.....	2 ½ oz.
Peppermint Water.....	6 fl.oz.

Teaspoonful three times daily, in sweetened black coffee, before meals.

The daily amount may be gradually increased up to five teaspoonfuls. For children under sixteen years the amount of Ichthyol in the prescription was reduced to 1 ¼ dr.; of creosote carbonate to 2 ½ dr.

Dr. Charles F. Spangler, of Kane, Pa., says (*Proceedings of the Philadelphia County Medical Society*, Dec., 1901):

"Ichthyol is acceptable to the stomach, promoting its function. It is readily absorbed by the alimentary mucosa, and when administered in quantity is in turn eliminated by the mucous surfaces in general. In the tissues it possesses, to a high degree, the property of stimulating that function of protoplasmic life concerned in constructive metabolism, resulting in an increase in bodily weight, and, aside from the local impression exerted through the process of elimination, accomplishes its chief curative value in tubercular and other forms of wasting disease through this reconstructive property. . . . The plan most generally acceptable has been to begin with a No. 1 empty capsule (filled by the patient) after each meal for the first week, adding another to each dose during the second, and a third to each dose the third week. This dosage is maintained indefinitely, and presents the advantage of attaining the maximum degree of tolerance in the shortest time.

"If discomfort arises from the eructations the interval between each dose is apportioned to afford ample time for complete appropriation before another is introduced. This is provided for by giving the capsules after breakfast and at bed-hour.

"During the first week of the treatment little or no appreciable effect is noticeable in the chest symptoms; after that time, however, a gradual impression becomes manifest. The cough paroxysms lessen in intensity and frequency, the expectoration becomes more profuse, and the sputum loses a measure of its density. Proportionately to the amelioration of local symptoms the appetite improves, and there is usually a marked weekly gain in weight. . . . I would suggest, therefore, that all cases of obstinate cough or persistent irritation of the upper air passages, particularly when following an attack of grippe, pneumonia, or typhoid fever, be placed upon Ichthyol and appropriate habit discipline."

Dr. Mostkoff (*Allg. med. Central.-Ztg.*, No. 76, 1901) reports having employed Ichthyol in 50 cases of **tuberculosis**, administering the remedy in doses of from 5 to 20 drops, with an equal quantity of water, thrice daily, after meals, and using wine or black coffee as a vehicle. Symptoms of intolerance were not observed; on the contrary, the appetite improved, and the patients gained in weight and strength.

Dr. William Odell, Hon. Physician to the Western Hospital for Consumption, Torquay, in a paper read at the National Tuberculosis Conference, London, Feb. 17, 1909, reported on his use of Ichthyol in 165 cases of **pulmonary tuberculosis**, of which 123 were treated with Ichthyol. The results obtained lead the author to say that:

"There is no doubt whatever in my mind that Ichthyol tends to diminish the amount of coughing and expectoration, and therefore to minimize the liability to hemorrhage. There is no doubt also that Ichthyol has the effect of reducing temperature, and keeping it within a very limited range both as to the evening rise and the corresponding morning fall. I believe it has a beneficial effect upon the night sweats. . . . It seems almost paradoxical to say that a medicine which is at first nauseous should have a beneficial effect upon the appetite but such is really the case, and the result is shown in an increase of weight. There is no doubt also that the patient has an increased sense of well-being, is in better spirits, and happier in himself whilst taking Ichthyol, and this is no small advantage, and tends to promote recovery. I usually commence with 7½ minims of Ichthyol in half a wineglass of water three times a day, after food, and gradually increase it up to 10 minims thrice daily, and I have never gone beyond that dose, though, no doubt, much larger doses would be tolerated in many cases."

In a more recent paper on "Further Evidence of the Value of the Treatment of Pulmonary Tuberculosis with Ichthyol," read at the International Congress against Tuberculosis, in Rome, April, 1912, the same author cites the results obtained in 66 additional cases treated by him. These results bear ample confirmative testimony regarding

the excellent Ichthyol effect, and particularly emphasize the fact that brightness and cheerfulness is one of the invariable effects of the treatment by Ichthyol, while at the same time there is a more or less decided gain in weight, and the patients acquire a healthy, ruddy complexion.

Dr. William S. Barnes (*Med. Record*, Jan. 21, 1911) gives the clinical histories of 8 cases taken from a large number observed by him in which Ichthyol proved most effective in pulmonary diseases. The author believes Ichthyol to be a safe and valuable remedy in **tuberculosis** in the early stages, **bronchitis** in all its forms, and in **pleurisy**. The remedy is given in doses of as much as 20 grains three times daily, without any untoward effect other than a tendency to cause frequent stools when given in very large doses. The Ichthyol is preferably given with peppermint water, with sometimes a small quantity fluidextract of licorice.

Prof. De Renzi, President of the Third International Tuberculosis Congress, praises the internal use of Ichthyol as an adjunct in the treatment of pulmonary diseases. Like many other practitioners, he has observed that Ichthyol diminishes the cough and reduces expectoration, whilst patients enjoy a better appetite, and consequently gain in weight during its administration.

### Formula for Tuberculosis

Ichthyol..... 4 fl.dr.  
Peppermint Water..... 4 fl.dr.

Begin with four drops three times a day, increasing to forty drops daily; children five to twelve years of age, about half this amount; best given before meals. If patients persist in its use, they soon become accustomed to Ichthyol. Increase in dosage is

secured by giving one drop extra each day until forty is reached, where it is to remain. The drops should be taken in from a wineglassful to half a tumblerful of water, according to quantity. Pills and inhalations may be employed; though the effectiveness is said to be decidedly of less degree.

### Bronchitis

Dr. De Brun, of Beirut (*Ther. Gazette*, XXVII, No. 6) recommends Ichthyol internally in the treatment of **chronic bronchitis**. He prescribes as much as 15 grn. each day, made into ten pills with some inert powder; and he asserts that the results are marvelous—cough diminishing, and

the patient passing a good night undisturbed by the coughing and expectoration; the râles become less in number; there is a distinct improvement in the vesicular sounds; and the dyspnea also disappears. Another method of employing this drug consists in its use in the following formula:

Ichthyol.....	30 grn.
Glycerin.....	4 dr.
Syr. Orange.....	4 dr.
Water.....	3 oz.

A half to one teaspoonful several times a day.

Encouraged by the favorable reports on the use of Ichthyol in tuberculosis, grippe, etc., Dr. Walter B. Jennings (*St. Louis Med. and Surg. Jour.*) began to use the drug in the common form of bronchitis in children which so often follows measles, whooping-cough, and acute infectious diseases in general. He gives the histories of eight cases demonstrating the good effects of Ichthyol in the above-named conditions. It was administered as follows:

Ichthyol.....	32 grn.
Glycerin.....	4 fl.dr.
Spirit Orange.....	30 min.
Water.....	to make 2 fl.oz.

The author gives the following conclusions:

"(1) The first dose often causes nausea, vomiting, but later the child grows inured to the taste of Ichthyol. (2) Children under one year of age do not take Ichthyol well. (3) To avoid the unpleasant effects of Ichthyol it should be given after meals. (4) Increasing doses are not necessary for good results in children."

## Laryngeal Tuberculosis

Dr. T. P. Berens, of New York, says in the *Manhattan Eye and Ear Hospital Report* (1895, Vol. II, p. 94):

"In laryngeal tuberculosis the medicament is applied locally by firmly rubbing it into the diseased surfaces. One patient, who had been troubled four to five months with hoarseness, dysphagia, cough, much expectoration, night-sweats, loss of weight and strength, was cured after eight months' treatment. The application of Ichthyol caused some pain and a slight spasm of the glottis, followed by rather profuse secretion, which persisted several hours, but was followed by a sensation of comfort. Applications were made daily for a month, and then three times weekly. Of five other cases, two had no return of the disease twelve and fifteen months, respectively, after their last treatment; the third patient, a 'sweater,' received some benefit, but owing, no doubt, to his bad hygienic surroundings, he continued to lose strength and became worse. The remaining two cases died of general tuber-

culosis, although they had been much relieved of their painful laryngeal symptoms by the Ichthyol treatment."

## Tuberculous Glands

Dr. Walker Overend (*Lancet*, No. 3295) says that he has administered Ichthyol with obvious benefit in many instances where suppuration has seemed imminent or has already taken place, and has been much impressed by its power of inducing resolution. It has also been recommended in pulmonary phthisis when the cavities have become septic on account of the fact that it favors the process of dessication. The above considerations led him to give it a trial in the treatment of the enlarged tuberculous glands of childhood and with excellent results. Ichthyol, the author concludes, should be given a trial in the chronic tuberculous glands of adults. At times these are liable to suppurate and to discharge for weeks together; Ichthyol often checks the secretion and closes the sore.

## Tuberculosis of the Urinary and Genital Organs

The internal use of Ichthyol in tuberculosis of the urinary organs is recommended by Dr. Richter, of Glatz (*Deut. mediz. Ztg.*, 1900, No. 22), who gives the clinical history of a girl of nineteen, which serves to illustrate the beneficial results obtainable by the administration of Ichthyol.

The author, at the end of his report, states that the good effects obtained induce him to continue the use of Ichthyol, and expresses the belief that there is a possibility of complete recovery.

"B. Goldberg reports on 31 cases of **genital tuberculosis** treated with some of the most prominently known remedies, among which 13 were treated with Ichthyol internally, with such an encouraging measure of success that the author now prefers this remedy to all the others, including creosote and guaiacol. The local symptoms were improved in all the 13 Ichthyol cases; the general condition in 12, the appetite in 8 (very markedly and promptly); the weight in 4. Hematuria was checked in the 4 cases in which it existed; and night-sweats were abolished in 2. Relief from urinary suppuration was obtained in each case. The irksome and painful micturition suffered by some of the patients was greatly reduced. No untoward effects occurred. In a later period of his report the author mentions several more cases treated with Ichthyol, all successfully."—(*Merck's Archives*, May, 1899, p. 200.)



## Ichthyol in Rheumatic and Neuralgic Affections

Each new addition to the list of substances which enable the physician to fight pain always meets a warm welcome from the profession. When, therefore, Ichthyol was found to possess analgesic qualities, it was immediately employed in cases where morphine, opium, salicylates, etc., had been the main reliance. The following statements of eminent men, and quotations from acknowledged reliable sources, are hence worthy of consideration, and tend to show that Ichthyol is well worth trying in painful affections of all kinds.

### Rheumatism, Gout, Lumbago, Etc.

The *Therapeutic Gazette* (Vol. VII, p. 416), referring to Dr. Unna's experience with Ichthyol, says:

"He has been most successful in the treatment of **chronic and acute rheumatism**. He claims there has been no remedy employed of equal efficiency in this painful disease. A 10-per cent. ointment of Ichthyol and petrolatum is painted on the affected joint, which is then wrapped well in cotton. In some chronic cases he uses a 50-per cent. ointment, and in very bad cases he uses it pure. Good results have been recorded in muscular rheumatism."

Prof. Horatio C. Wood, in his *Therapeutics; Its Principles and Practice* (1897, p. 623), says:

"In **lumbago** and other forms of **muscular rheumatism**, in rheumatic or gouty joint disease, indeed, in almost every form of subacute or chronic gout, according to Schweninger, Lorenz, and others, a few rubbings with pure Ichthyol or a 50-per cent. ointment will produce an immediate and remarkable effect."

*Wood's Medical and Surgical Monographs* (Vol. I, p. 730) declares:

"**Rheumatism** has in some cases been benefited by Ichthyol; **acute rheumatism** of mean intensity, treated by applications of a 10-per cent. ointment, the joints being wrapped in cotton, has been as quickly cured as by the use of salicylic acid. Chronic rheumatism requires a stronger ointment, 20 to 50 per cent. In the torpid forms pure Ichthyol may be used, washing the skin with soap and water beforehand."

The *International Medical Annual* (1900, p. 452) reports as follows:

"Ichthyol has been shown to be an excellent remedy for the external treatment of acute articular rheumatism, because of its analgesic and reducing properties. Friedrich Kölbl reports having treated 117 cases of **acute articular rheumatism** at the most various stages and with the most satisfactory results. The treatment is also of great benefit in true gout."

Sajou, in the *Annual of the Universal Medical Sciences* (1889, p. A 96), in referring to Dr. Lorenz's experiences with Ichthyol in treating forty-eight cases says: "Its action was especially good in rheumatism, in which disease the author was able with it to produce results unattained with other drugs." In referring to Prof. Nussbaum's experiences with the same remedy, it is said that he "has seen the violent gouty pains disappear under the external application of an Ichthyol ointment." Concerning Dr. E. Martin's trials of Ichthyol, Sajou tells us that this author "used a 10-per cent. ointment with hydrous wool fat in several cases characterized by inflammatory enlargement, and in some instances in which pain, depending probably on inflammation, was the principal feature."

Alcohol-ether sprays of Ichthyol (10- or 30-per cent.) have been used in the Hospital for Nervous Affections, Berlin, under the direction of Prof. A. Eulenburg, with great efficacy, in **muscular and articular rheumatism**, when not too severe and inveterate. Prompt and surprising effects were frequently seen in cases of **sciatica** and **lumbago**.

In solutions of 10 to 50 per cent. Ichthyol has been used for a number of years by Prof. E. Schweninger, of Berlin, principally in **rheumatism, lumbago, sciatica**, and the like. He characterizes it as "superior to any other established remedy."

The *Annual of the Universal Medical Sciences* (1888, p. 472) refers to some experiences of Dr. J. Schmidt, of Berlin, Germany, in which he treated with Ichthyol over thirty cases of **tumefaction** of joints or muscles, whether due to rheumatism or trauma, and has never failed to remove the swelling in from one to four days. On joints he uses a 25-per cent. solution of Ichthyol, and on muscles 2 fl.dr.

of a 30-per cent. solution of Ichthyol, with 1 ounce of wool-fat well rubbed in. He agrees with Binz, Nussbaum, Eulenburg, and others in considering its most important employment to be in rheumatism, and that it excels in remedial power the salicylates and the alkalies. He has succeeded in curing a number of obstinate cases of this disease with Ichthyol in three to five drop doses continued for several months, and recommends that it be given further trial.

The *Amer. Med.-Surg. Bull.* (Vol. XI, p. 216) states as follows:

"Dr. L. D. Bulkley, of New York, has a number of times seen the greatest benefit result from painting pure Ichthyol over joints enlarged by rheumatism and gout, and then applying one or two thicknesses of flannel, wrapped firmly on the part, forming an adherent dressing with the Ichthyol. This may be removed and fresh Ichthyol painted on daily, and wrapped with the same flannel; patients who have long suffered from these conditions have obtained more relief from this method of treatment than from any previously adopted."

Dr. Unna (*Deut. med. Ztg.*, 1883, No. 17) says:

"In my opinion we have not, up to the present time, possessed so effectual a remedy for this dreadful disease (**rheumatism**); and it is fair to consider Ichthyol an antirheumatic of the first rank."

The *Corresp.-Blätter d. ärztl. Ver. von Thüringen* (1885, No. 8), contains a report to the following effect:

"Dr. Ackermann treated, among others, a case of **severe chronic rheumatism** (which forbade all but the sitting posture) with 25-per cent. Ichthyol ointment. First the parts were bathed with soap and tepid water, and then the ointment rubbed in. After the first application the almost intolerable pains in the joints suddenly vanished, never to return, and the next morning the patient was able to walk about her room. Swelling gradually diminished, and, after three weeks, walking for several hours each day became possible."

Prof. Von Nussbaum (*Monatsh. f. prakt. Dermat.*, 1886, No. 11), of Munich, reports as follows:

"In many cases of **arthritic pains** of long standing which had rendered life a burden the severe suffering was instantly relieved, and in a short time entirely removed, by application of a strong Ichthyol ointment (50-per cent.) and covering up with salicylated cotton-wool."

Dr. Lehmann, Medicinal Councillor of Oynhausen, speaks thus of Ichthyol (*Ärztl. Prakt.*, 1889, Nos. 24, 25):

"I found Ichthyol curative and anodyne in **acute articular rheumatism**. The swelling of a joint, or of several, in a leg or arm, with violent pain, could

be efficiently combated by Ichthyol locally, where salicylates, antipyrine, acetanilide, phenacetin, and quinine were of little or no avail." In a case of gonorrheic rheumatism, involving both legs, with various other nervous anomalies, the pains were removed by Ichthyol locally, and the associated nerve-troubles were also reduced. To avoid staining the clothing, the pure Ichthyol was applied, and then French chalk was dusted on to form a firm crust. Over this a simple wool-dressing was fastened.

From an experience with Ichthyol extending over three years, Drs. Hoffman and Lange state (*Therap. Monatsch.*, 1889, No. 5) as follows:

"In inflammations of the joints, whether traumatic or rheumatic, excellent results were obtained by the following method: The operator's hand was well rubbed with Ichthyol soap, and the affected joint carefully and repeatedly embrocated with the latter; then fairly hot water was poured over, five or six times, the superfluous moisture taken up with a sponge, and Ichthyol, pure, applied with a spatula so that the entire joint was covered with a dark brown, smooth Ichthyol layer. Over this a thick layer of wool was applied without any considerable pressure. The dressing was renewed in from six to twelve hours."

Dr. Lorenz (*Berl. klin. Wochenschr.*, 1888, No. 29) describes cases in which rheumatism was treated by the combined internal and external use of Ichthyol. He says:

"I noticed excellent results in rheumatism from the internal use of Ichthyol simultaneously with its external application; I had a great number of cases, all of which terminated satisfactorily, although other remedies had been used before in vain. I always began with small doses—for instance one pill containing  $1\frac{1}{2}$  minims, or if in liquid 4 drops of Ichthyol, three times a day, increasing gradually to 5 pills or to 20 drops three times a day; eructations of gas, if present, soon disappeared. Externally, I sometimes applied an ointment composed of equal parts of Ichthyol and petrolatum, but more frequently one composed of equal parts of Ichthyol and lanolin, 3 times a day. Sometimes I ordered a lotion composed of equal parts of Ichthyol, alcohol, and ether, to be rubbed in several times daily. The pain was always promptly relieved, the joints became flexible, appetite was restored, the general health was improved, and the muscular power was increased."

Dr. Cranstoun Charles (*Lancet*, 1891, Sept. 26) says, among other things, he has witnessed most marked and rapid relief, in five cases of **chronic rheumatic pains** of joints or muscles, upon thorough friction with 30-per cent. Ichthyol ointment. In other cases washing of the painful spots was made the preliminary to embrocation with pure Ichthyol or with a mixture of lanum and Ichthyol (equal parts). The application was made twice daily. In two cases of acute rheumatism Ichthyol was successfully used

externally and internally at the same time. For the topical application in the one case the remedy was dissolved in alcohol and ether (3 parts Ichthyol to 7 of solvent), and applied to the inflamed joints, which were then enveloped with cotton-wool and oiled silk. In the other case an ointment of the same strength was used. Pain was early alleviated and a rapid cure effected. The application of Ichthyol and petrolatum proved most beneficial in three cases of gouty swelling of the joints of the hands. In one of them repeated application of a 5-per cent. hot aqueous solution did good service. In another instance a mixture of Ichthyol, 20 parts, ether, 10 parts, and glycerin, 10 parts, was applied to the affected joints, and these then enveloped in cotton-wool. After a week of this treatment, a collodion (Ichthyol and ether, of each 10 parts, collodion 20 parts) was painted on. Terebene and colchicum were prescribed internally, and a rapid cure effected.

The *Amer. Med.-Surg. Bull.* (1895, p. 919) states that Dr. P. Schmitz, of Leonore, Ill., found Ichthyol to be a good analgesic, anodyne, antineuralgic, anti-rheumatic, etc.; and quotes the author as follows:

"In a case of severe lumbago I ordered an inunction with Ichthyol, 1½ fl. dr., ether and alcohol, equal parts, to 1 fl. oz.; this to be rubbed in well, three or four times daily, and the parts covered with cotton. I met the patient shortly afterward, and he told me that he had used only half of the liniment when the backache left him. I treated many similar cases this way, with the same happy results and without a single failure. In pleurodynia, intercostal neuralgia, and sciatica I use the same liniment, and give internally two to three pills (1½ min.) two or three times daily, with good results."

"A very good and helpful external application for cases of acute rheumatism is Ichthyol and salicylic acid, of each 1 dram to lanum, 1 oz.," writes Dr. Wm. M. Gregory, of Berea, Ohio (*Merck's Archives*, Oct., 1905). "Mix and apply to the affected joints and cover with absorbent cotton. Do not make this up with petrolatum instead of lanum as the petrolatum will render the salicylic acid absolutely inert. The quantity of salicylic acid per ounce in this ointment can be lessened, if necessary, for very weak, susceptible patients."

Dr. Hobart A. Hare (*Practical Therapeutics*, 1905, p. 778) says:

"A most valuable application to the inflamed joints of rheumatism, and the one the author always employs, both during the acute stage and afterward when they remain swollen and enlarged, is Ichthyol and lanum, equal parts; rub in well and apply about the inflamed part on lint." The author also states (page 781) that "sometimes the application of Ichthyol and lanolin

(in acute articular rheumatism) in equal parts, also rubbing this ointment into the tissues thoroughly, will aid in the absorption of the inflammatory exudates". In chronic rheumatism, the author says (page 783): "For the reduction of enlargements of the joints due to the disease, and accompanied in some cases by pain, the following ointment is serviceable:

Ichthyol.....  $\frac{1}{2}$  to 1 oz.  
Lard..... 1 oz.

    Rub into joints thoroughly.

In many cases Ichthyol is certainly the most efficient remedy for the enlarged and painful joints."

Dr. Post (*Therap. Gaz.*, Sept., 1902) recommends painting the rheumatic joints with pure Ichthyol which is covered with cotton and oiled silk; this is repeated every eight hours. In chronic cases he gives the Ichthyol internally as well; and in the acute form he administers sodium salicylate.

Dr. Hirschhorn (*Deutsch Aerzte-Ztg.*, 1907, No. 1) reports having obtained excellent results in **painful rheumatic affections, neuralgias**, etc., using a 10-per cent. Ichthyol-glycerin solution or 6-per cent. Ichthyol ointment.

### Formulas for Rheumatism

#### Arthritis

Ichthyol..... 2 fl.dr.  
Glycerin..... 2 fl.dr.  
Peppermint Water..... 4 fl.dr.  
    Ten to thirty drops in water, three times daily.

Ichthyol..... 1 fl.oz.  
Oil Olive..... 3 fl.oz.  
Oil Eucalyptus..... 30 min.

    Apply thickly, cover with cotton, and bandage firmly.

    (In *acute arthritis*.)

Ichthyol..... 4 fl.dr.  
Soft Soap..... 4 dr.

    Apply freely and cover with absorbent cotton, once or twice daily.

    (In *acute arthritis*, especially of hands and feet.)

N.B.—In all rheumatic and gouty conditions, in addition to the external treatment, the simultaneous internal administration of Ichthyol is recommended.

#### Gout

Ichthyol..... 2 fl.dr.  
Belladonna Ointment..... 4 dr.  
Lanum..... 2 dr.

    Rub in thickly, cover with cotton-wool, and bandage firmly.

#### Rheumatism

##### Acute Articular

Ichthyol..... 1 fl.oz.  
Oil Citronella..... 15 min.

    Apply to joints with brush and wrap in cotton.

    (In *acute articular rheumatism*, confined to one or two joints.)

Ichthyol..... 1 fl.dr.  
Salol Merck..... 1 dr.  
Menthol Merck..... 24 grn.  
Lanum..... 1 oz.

    Anoint painful joint two or three times daily.

Ichthyol..... 4 fl.dr.  
Ext. Belladonna..... 1 dr.  
Ext. Opium..... 30 grn.  
Lanum..... 1 oz.  
Benzoinated Lard..... 1 oz.

    Rub in well and apply about inflamed part on lint.

## Formulas for Rheumatism—(Continued)

*Chronic Articular*

Ichthyol.....	4 fl.dr.
Oil Betula Merck.....	2 dr.
Belladonna Ointment.....	4 dr.
Lanum.....	4 dr.

Apply freely three times daily and envelop joint in cotton-wool.

Ichthyol.....	1 to 3 fl.dr.
Alcohol.....	5 fl.dr.
Ether.....	5 fl.dr.

Rub in thoroughly twice daily. If skin is very sensitive, use 10-per cent. Ichthyol salve, and cover with cotton.

(In *chronic rheumatitis*, with acute painful swellings, etc.)

Ichthyol.....	2 fl.dr.
Sodium Salicylate Merck...	2 dr.

Divide into sixty capsules.

Three to ten capsules daily two hours after meals.

Ichthyol.....	2 fl.dr.
Salicylic Acid Merck.....	30 grn.
Castor Oil.....	2 fl.dr.
Collodion.....	2½ fl.oz.

Paint joints night and morning.

*Muscular (Myalgia)*

Ichthyol.....	1 fl.dr.
Glycerin.....	2 fl.dr.
Lanum.....	7 dr.

Externally.

Ichthyol.....	2 to 10 fl.dr.
Olive Oil.....	1 to 2 fl.dr.
Lanum.....	20 dr.

Externally.

Ichthyol.....	1 to 5 fl.oz.
Water.....	5-7-9 fl.oz.

Apply on lint or gauze, keeping dressing constantly moist.

(In *muscular rheumatism*, *acute inflammatory rheumatism*, *lumbago*, *sciatica*, *tic douloureux*, and *gout*.)

Ichthyol.....	6 fl.dr.
Chloroform.....	2 fl.dr.
Alcohol.....	1 fl.oz.

Rub in thoroughly, envelop joint in cotton-wool.

(In *muscular rheumatism*, *acute* and *chronic arthritis*.)

Ichthyol.....	3 fl.dr.
Oil Olive.....	1 fl.dr.
Oil Wintergreen.....	30 min.
Lanum.....	10 dr.

Anoint painful muscles three times daily.

Ichthyol.....	4 fl.dr.
Distilled Water.....	6 fl.dr.

Wash affected part with warm soap-water, and, after embrocation, envelop in cotton-wool.

Ichthyol.....	4 fl.dr.
Chloroform.....	1 fl.oz.
Oil Hyoscyamus.....	1 fl.oz.

Apply several times daily, and cover parts with cotton. Shake well before using.

Ichthyol.....	3 fl.dr.
Chloroform.....	1 fl.dr.
Olive Oil.....	6 fl.dr.

Anoint the painful parts.

(Also used in *lumbago* and *neuralgia*. In *chronic* cases Ichthyol is used also internally.)

Ichthyol.....	1 fl.oz.
Alcohol.....	1 fl.oz.
Ether.....	1 fl.oz.

Apply.

Ichthyol.....	3 fl.dr.
Chloroform.....	1 fl.dr.
Alcohol.....	4 fl.dr.

Rub in, and envelop part in cotton-wool.

## Neuralgias

The *Therapeutic Gazette* (1888, p. 273) says:

"Dr. von Nussbaum's experiences show that the drug was most successful in that class of *painful neuralgias* of the bones, joints, and muscles which is

accompanied by difficulty in moving, and which for months had been treated with other remedies. In such cases Ichthyol effected a cure in a couple of weeks, indeed, in a few days the disease was practically mastered. In cases of gout inflammation, where the motion of the limb or joint had been greatly impaired, and every movement was accompanied by a cracking sound, as soon as the Ichthyol treatment was commenced the pain first subsided, and soon afterward the stiffness gradually disappeared, and movements became both possible and painless."

Dr. E. H. Squibb, of Brooklyn, in the *Trans. of the N. Y. State Med. Assoc.* (1899, p. 671), reports as follows:

... "Internal administration of Ichthyol is being used more largely. Dr. J. Crocq, of Brussels, Belgium, has met with considerable success in the treatment of **sciatica** by administering internally gelatin capsules each containing 0.1 Cc. (1½ minims) of Ichthyol. A local application containing Ichthyol was also used. He claims that this agent is the most effective yet known, and recommends its further use. Dr. Crocq, again, recommends a liniment containing Ichthyol, 5 parts, glycerin, 2 parts, and water, 3 parts, in cases of sciatica. This is to be applied five or six times a day by actively rubbing it in."—(*La Sem. Méd.*, Vol. XIX, p. 208; and *La Presse Méd. Belge*, Vol. LI, p. 372)."

The *Therapeutic Gazette* (1893, Vol. IX, p. 402) states this:

"Damiens, in a Paris thesis, highly recommends the employment of Ichthyol hypodermically, and states that it possesses under these circumstances analgesic properties, as there is, in addition to the absorption of the swelling, a suppression of the pain. Particularly is this of value in cases of **neuralgic pains** associated with inflammatory processes which have caused exudations. It is hardly necessary to add that hypodermic injections of Ichthyol are not equal in analgesic power to hypodermic injections of morphine, but they are very much more innocuous."

Dr. P. Schmitz, of Leonore, Ill., states (*Amer. Med.-Surg. Bull.*, 1895, p. 919) that he has found Ichthyol to be a good analgesic, anodyne, and antineuralgic. He has used a liniment of Ichthyol 1½ dr. and ether and alcohol equal parts to make 1 fl.oz., the mixture to be well rubbed in three to four times daily, and the parts covered with cotton. This treatment, with Ichthyol given internally as well (1½ minims two or three times a day), has secured good results in **intercostal neuralgia** and **sciatica**.

Hirschcron (*Deut. Aerzte-Ztg.*, 1907, No. 1) reports having obtained excellent results in **very painful neuralgias**, using a 6 per cent. Ichthyol ointment or a 10 per cent. Ichthyol-glycerin solution.



Dr. Hobart A. Hare (*Practical Therapeutics*, 1905, p. 789) states that a useful method of treating **sciatica** consists in taking a strong glass rod with a round, smooth end, and, after anointing the skin over the course of the nerve with a little Ichthyol ointment, to pass the end of the rod back and forth over the tender area, using as much pressure as can be borne. By this means massage or pressure on the nerve is accomplished.

### Formulas for Neuralgias

#### Neuralgia

Ichthyol..... 15 min.  
 Mercurial Ointment..... 15 grn.  
 Chloroform..... 90 min.  
 Spt. Camphor..... 90 min.  
 Anoint or paint painful region.  
 Shake well before using.

Ichthyol..... 1 fl.dr.  
 Absolute Alcohol..... 5 fl.dr.  
 Ether..... 5 fl.dr.  
 Externally.

Ichthyol..... 90 min.  
 Chloroform..... 1 fl.dr.  
 Spt. Camphor..... 1 fl.oz.  
 Rub in two or three times daily.

Ichthyol..... 2 fl.dr.  
 Mercurial Ointment..... 30 grn.  
 Chloroform..... 3 fl.dr.  
 Spt. Camphor..... 3 fl.dr.  
 Embrocation. Shake before using.

Ichthyol..... 90 min.  
 Salicylic Acid Merck..... 15 grn.  
 Ext. Belladonna..... 1 dr.  
 Lanum..... 6 dr.  
 Petrolatum..... 4 dr.  
 Rub in well three times daily.  
 (In *rheumatic* neuralgia.)

Ichthyol..... 5 fl.dr.  
 Comp. Oil Hyoscyamus  
 (N. F.)..... 1 fl.oz.  
 Chloroform..... 1 fl.oz.  
 Liniment. Use in conjunction  
 with internal administration of Ich-  
 thyol.  
 (In *sciatic* neuralgia.)

#### Sciatica

Ichthyol, 10 to 30%..... q.s.  
 Or:

Ichthyol..... 1 fl.dr.  
 Lanum..... 1 oz.  
 Oil Citronella..... 15 min.  
 For inunction.

Ichthyol..... 15 min.  
 Salicylic Acid Merck..... 15 grn.  
 Castor Oil..... 1 fl.dr.  
 Collodion..... 1 fl.oz.  
 Paint on night and morning.

Ichthyol..... 15 min.  
 Distilled Water..... 1 fl.oz.  
 Fifteen to thirty minims subcu-  
 taneously. Repeat until pain is  
 relieved.  
 (Also in *intercostal* neuralgia, *sub-  
 acute* and *chronic articular* rheumatism,  
*chronic myelitis*, etc.)

## Ichthyol in Infectious and Contagious Diseases

The use of Ichthyol as a remedy for the treatment of **infectious and contagious diseases** has markedly emphasized its bactericidal action. The quotations given under the various diseases indicate that this is fully appreciated by a number of medical writers. By the internal use of Ichthyol intestinal asepsis so far as possible, appears to be maintained and auto-intoxication avoided; and in consequence, febrile symptoms appear to be held in abeyance and the patient kept in the most comfortable position possible. Clinical experience shows that by its external application in the eruptive fevers, the skin is kept free from irritation, inflammatory conditions are subdued, and annoying itching avoided. The combined effect of internal and external treatment, by bringing an increase of comfort to the patient, in overcoming the annoying symptoms named, removes, it would appear, the chief causes of dreamful, restless sleep, or marked insomnia, so that in this way the maximum evils of these diseases are avoided. That Ichthyol benefits in still other ways, it is fair to infer from the reports of unbiased observers, whose standing must be known to many of our readers.

### Influenza (Grippe)

"In certain cases the pains have been greatly relieved by inhalations of Ichthyol, and Unna has resorted to this method with success in **influenza**, and in **bronchial catarrh** with fever and generalized pains. A dessert-spoonful of Ichthyol is added to one to two quarts of water, and this is gently heated and the fumes are inhaled. This method has clearly been successful in cases of recent coryza with abundant secretion, and in catarrh of the larynx and trachea accompanied by abundant hypersecretion. A beginning coryza is often aborted by a ten minutes' inhalation."—(*Wood's Medical and Surgical Monographs*, Vol. I, p. 730).

Dr. Lorenz, in *Berliner klin. Wochenschr.*, 1890, No. 15, says:

"Owing to the fact that Ichthyol has been recommended by Prof. Ewald in diseases of the throat, and regarding influenza as dependent upon a certain bacillus, as is the case in erysipelas, which affection is always successfully

treated with Ichthyol, I determined to try inhalations of this remedy (Ichthyol, 1 part, water, 50 parts). These inhalations have been employed in 110 cases, of which I deduct 30 as being doubtful, on account of being cured in two days. As to the remaining 80 cases, it is certain that in every instance the symptoms were promptly alleviated by the first inhalation (vapor-spray); the convulsive cough abated. After the second or third inhalation the patients were generally so well satisfied with the effect that they became desirous of inhaling again. Ichthyol solution was inhaled twice daily; it was also repeatedly evaporated on the stove in the sick-rooms. Sometimes, for control, patients were deprived of this treatment 2 or 3 days later, in which case the cough reappeared almost immediately. The cough disappeared completely in 76 cases after 6 to 10 inhalations; expectoration ceased on the second day. The same good effect was noticed with respect to the mucous membrane of the nose; the excretion lessened, and ceased after about 10 inhalations. . . . As a whole, the duration of the disease was rather short; patients treated with Ichthyol did not suffer from relapses, nor required a long time to recuperate; in short, they came out from the struggle with influenza, unweakened."

### Formulas for Influenza

Inhalations of two-per cent. Ichthyol solution for ten to fifteen minutes, twice daily; and vaporization of the solution over a spirit flame, for inspiration.

In addition, the following internally is recommended:

Ichthyol.....	2 fl.dr.
Exsic. Iron Sulphate.....	30 grn.
Euquinine.....	1 dr.
Ext. Nux Vomica.....	4 grn.
Make into sixty pills.	
Two pills three times daily.	
(In debility following influenza.)	

Ichthyol.....	2 fl.dr.
Peppermint Water.....	4 fl.dr.
Five to twenty-five drops twice daily.	

### Measles (Rubeola)

"Dr. Kolbassenko (*Deut. med. Zig.*, XVIII, p. 663) states that he has used Ichthyol in eighteen cases of measles with excellent results. It was used in the form of an ointment (1:8). This was applied three times daily to the papules from the time of their appearance to the end. The excellent effects of Ichthyol were shown by (1) the slight itching accompanying the eruptive period, the affected parts being slightly or not at all painful; (2) the lowness of the fever, not over 39.3° C. in the suppurating stage; (3) the visible smallness of the suppuration of the pustules; (4) the period of desquamation was from three to four days—half the time usually required. The applications were also very well borne by all the children treated."—(*Amer. Med.-Surg. Bull.*, Vol. XII, p. 91).

"Struck with the remarkable results of Ichthyol in variola, Dr. Stisover (*Vratsch.*, Vol. XIX, No. 8, p. 235) decided to employ it in measles. It is true that measles is not such a severe disease as smallpox, but when we take into consideration the numerous complications which the disease frequently drags in its trail (pneumonia, capillary bronchitis, otitis, different ophthalmias, hyperpyrexia, meningitis), a good remedy capable of aborting or abating the

disease is a desideratum. Such a remedy unquestionably is Ichthyol. He used it in a late epidemic, and the patients' ages ranged from 6 months to 18 years. In every single case the results were highly satisfactory. When employed at the commencement, the disease was aborted, *i.e.*, the temperature became normal, the eruption did not make its appearance, and the child became well; when employed during the full development of the disease, the course of the latter was mitigated to a marked degree. In one case complicated with croup, and with a temperature of 104° F., the croup disappeared and the temperature became normal after two applications. The preparation which the author has employed is a salve consisting of Ichthyol one ounce and lard three ounces. The entire body was anointed twice a day."—(*Amer. Med.-Surg. Bull.*, Vol. XII, p. 478).

### Formula for Measles

Ichthyol .....	1 fl.dr.
Carbolic Acid Merck .....	3 grn.
Lanum .....	2 oz.
Cold-cream .....	1 oz.
Anoint body three or four times daily. (For <i>itching</i> .)	

### Mumps (Parotitis)

The *Practitioner* (Vol. LIX, p. 570) gives the following report:

"Dr. Tronchet, of La Rochelle, France, has met with success in the treatment of a very painful type of parotitis complicating influenza, by applying an ointment of Ichthyol 3, lead iodide 3, ammonium chloride 2, and lard 30. Generally within two days' time the trouble was under control. The ointment was rubbed on the affected gland three times a day, and a cotton-wool dressing applied."

*La Semaine médicale* (Vol. XIV, p. 214) states:

"Dr. H. Stauffer has obtained rapid disappearance of pain and swelling in mumps by means of inunction with 50-per cent. Ichthyol-lanum ointment, mornings and evenings. He employed for each inunction a lump as big as a hazel-nut."

### Formulas for Mumps

Ichthyol .....	1 fl.dr.	Ichthyol .....	2 fl.dr.
Lead Iodide .....	45 grn.	Lanum .....	2 dr.
Ammonium Chloride .....	30 grn.	Cerate Lead Subacetate .....	2 dr.
Petrolatum .....	3 dr.	Belladonna Ointment .....	2 dr.
Lanum .....	5 dr.	Oil Rose .....	2 drops
Apply freely three times daily.		Apply three times daily.	

### Scarlatina (Scarlet Fever)

"Seibert, Professor of Pediatrics at the New York Polyclinic, (*Arch. of Ped.*, Sept., 1895) has found that inunctions of a five per cent. ointment of Ichthyol have been followed by most marked effect upon the local condition

of the skin (in **scarlatina**), producing rapid decline of fever and improving the general condition. The swollen, red skin shrinks and turns pale-brown, the temperature declines three to four degrees within two hours, and the nervous, itching, peevish child becomes quiet and usually goes to sleep. While he does not believe that the treatment has any specific effect upon the character of the general infection in scarlatina, so as to change a malignant case into a mild one, he is convinced that the ointment applied in these cases destroys most of the bacteria causing scarlatinous dermatitis, and thereby materially aids in overcoming the general infection."—(*American Year-Book of Medicine and Surgery*, 1897, p. 769).

"Ichthyol in scarlet fever is the subject of a further report by Seibert (*Jahrb. f. Kinderheilk. u. Phys. Erzieh.*, 1900, Vol. LI, p. 308), who since 1894 has treated fifty-six cases of scarlet fever with inunctions of Ichthyol. The inunctions were made with five- to ten-per cent. Ichthyol-lanolin ointments every six to twelve hours, according to the intensity of the cutaneous inflammation, and in such a manner that the entire surface of the body, from the toes to the head, was so impregnated as to show almost no sign of the ointment. . . . (1) The cutaneous swelling subsides after the first thorough inunction. (2) The itching is immediately relieved, and disappears after several applications. (3) Rhagades and secondary phlegmonous and erysipelatous infiltrations are by this means entirely prevented. (4) The temperature falls, in all cases where no complications exist, from one to three degrees F. in a few hours. (5) Restlessness and insomnia are relieved in cases, as so frequently happens, where they are caused by the cutaneous inflammation. . . . The intensity and period of exfoliation are greatly lessened and reduced by the employment of Ichthyol ointment, which, during this period, must be applied once daily. No toxic phenomena were ever observed. The pharyngeal complications from which, ordinarily, patients run great risk, were avoided by the author by enforced prophylactic irrigation of the pharynx and its environment with five-per cent. Ichthyol solutions, because Ichthyol has been shown to be non-toxic even in large doses, and because of its strong bactericidal power even in weak solutions, on pyogenic and erysipelatous streptococci."—(*Merck's Archives*, May, 1900, p. 191).

In an interesting article, M. S. Nasarow (*Deut. med. Zeit.*, 1904, No. 78) gives his experience with Ichthyol in the treatment of **scarlet fever**. As soon as the diagnosis is assured, the author gives Ichthyol in capsules or in solution, according to the following formula:

Ichthyol . . . . .	30 Cc.
Distilled Water . . . . .	10 Cc.
Three drops three times daily for children twelve to thirteen years old.	

With this method of treatment, the disease never lasted more than five to fifteen days, and complications were never seen except in one case where syphilis was also present.

The *Medical Summary* for Nov., 1905, says the following:

"There is no remedy of more universal application than Ichthyol. Our confirmatory evidence runs from personal experience with intractable soft

corns, so painful and stubborn of relief, to the word of the resident physician of a most noted hospital for consumptives that 'they use it almost without limit, both internally and externally.'

"One of the latest applications is its use in **scarlatina**. Its antiseptic and cooling properties in all erythematous and erysipelatous inflammations; in fact, in all inflammatory conditions, would also point to its use in this disease. Here again all anticipated benefits have been realized and verified; and in the future no doubt it will be the classical treatment to be followed by all practitioners."

Dr. W. A. Lawrow (*Deut. Med.-Ztg.*, 1905, No. 41) highly advocates the use of Ichthyol in **scarlet fever**. He applied the Ichthyol locally to the entire body twice daily (every morning and evening), using a mixture of Ichthyol 40 min., water 6 dr., and glycerin 6 dr. The course of the disease is shortened, and, if the treatment is begun no later than the second day, a pronounced diphtheritic membrane will not form and the pharyngeal symptoms are less marked than usual. Desquamation appears in all cases, but sets in earlier. The treatment of scarlet fever by means of applications of Ichthyol to the entire body, therefore, shortens the entire pathological process and diminishes its intensity. The author says:

"I am absolutely convinced of the curative effect of Ichthyol upon the scarlatinal process. It is interesting to note that improvement generally occurs only if the treatment is begun no later than the second or third day; that is, at a time when the eruption is not yet pronounced. In conclusion I would like to quote the words of Nasarow: 'I recommend the use of the Ichthyol treatment to all physicians so that they can form an opinion for themselves of the course of scarlet fever.'"

Dr. C. G. Strobel, of Dolgeville, N. Y. (*Med. World*, Mch., 1906), recommends a 5- to 10-per cent. Ichthyol ointment as an inunction for the skin in **scarlet fever**.

In a note on the Treatment of Scarlet Fever, Dr. W. T. Marrs, of Peoria Heights, Ill. (*Merck's Archives*, Aug., 1907), reports having employed Ichthyol a number of times in this disease, with gratifying results, and henceforth will always depend upon it. He uses a mixture of Ichthyol, glycerin, and water, which is applied over the entire body. The writer also insists that no "just as good" preparation should take the place of Ichthyol if it is desired to be certain of the result. The treatment is assisted by the internal administration of calomel and salines, potassium citrate

as a cooling diuretic, and chiefly milk, or preferably buttermilk, as the diet during the stage of greatest hyperemic condition of the kidneys.

"Dr. Kolbassenko's favorable results with Ichthyol in **small-pox**, and Dr. Strisover's similar results with Ichthyol in measles, induced Dr. Solctarevsky to try this remedy in scarlet fever (*Vratsch*, No. 30, 1898, p. 888). He employed a 5-per cent. ointment, which was applied to the entire body morning and night. The results were highly gratifying. The fever lasted on an average only five days, the temperature not exceeding 102° to 103° F.; the eruption remained discrete, there were no complications of any gravity in the kidneys, ears, or glands, no edema, etc. The subjective feeling became remarkably improved from the very commencement of the treatment; on the second day the children demanded food and asked for playthings. The author employed the treatment in seven cases only, but he says he is convinced of the beneficial action of the Ichthyol, taking into consideration the fact that that was a very severe epidemic, giving in cases not treated with Ichthyol seventy-five per cent. of severe complications and a mortality of fifteen per cent. The author believes that Ichthyol increases all the defensive powers of the organism, while exerting no deleterious effect on the kidneys."—(*Am. Med.-Surg. Bull.*, Vol. XII, p. 991).

### Formulas for Scarlatina

Ichthyol..... 5 fl.dr.  
Lanum..... 10 oz.  
Olive Oil..... 1 fl.oz.

Incorporate the Ichthyol with the lanum, then add the olive oil.

Rub well in over entire body from neck to foot every six to twelve hours, continuing friction until skin is nearly dry. (For all *cutaneous symptoms*.)

Ichthyol..... 1 fl.oz.  
Glycerin..... 2 fl.oz.  
Rose-water..... 5 fl.oz.

Apply all over body as soon as desquamation begins.  
(To hasten *desquamation*.)

### Typhoid Fever

Dr. Soet (*Aerztliche Praxis*, XIV, No. 1) tried Ichthyol in nine cases of **typhoid fever**. In one case the drug was given in the last stage of the disease, for the weakness and anemia, and with good effect. The patient took daily from 3 to 8 pills, each containing 1½ or 2½ grn. of Ichthyol. The author administered the remedy in pills or in solution, with plain or peppermint water; 5 to 20 drops of the solution were given thrice daily before meals in one-third glass of water. The patients soon learn to disregard the taste. To cover the unpleasant flavor a piece of chocolate may be taken after the dose. The headache promptly disappeared

and the appetite improved noticeably after the first few doses. Of all symptoms, says the author, only the fever showed that the disease was still there. Since the drug is absolutely harmless, the author recommends further trial of it in typhoid fever.

The *Wien. klin. Rundschau* (1899, No. 14) contains this report:

"Moritz Cohn, of Hamburg, in reviewing the experiences of Mosler and Uhlenhuth with Ichthyol baths in scleroderma, strongly advises trying this form of Ichthyol medication also in other infections. He refers to a publication from the Hygienic Institute of Greifswald University, by Abel, in 1893, regarding favorable action reported by Loeffler from Ichthyol in typhoid, and advising its trial in other infections likewise."

### Formulas for Typhoid Fever

Ichthyol . . . . .	2 to 5 fl.dr.	In addition <i>internally</i>
Distilled Water . . . . .	3 pints	
An enema once daily.		
(In <i>initial stage</i> ).		
Ichthyol . . . . .	4 fl.dr.	
Peppermint Water . . . . .	4 fl.dr.	
Five to ten drops three times daily.		

### Variola (Small-Pox)

Dr. I. S. Kolbassenko, (*Med. Record*, New York, Vol. LII, p. 739) of Russia, says:

"In eighteen cases of **variola** (in which Ichthyol was used) only two were fatal; these two cases were in a very serious condition when he undertook the treatment. From the time of appearance of the variola papules to the disappearance of the pustules, the following ointment is to be applied three times daily over the entire surface of the body: Ichthyol, 10; expressed oil of almonds, 60; anhydrous wool-fat, 20. . . . The treatment has the advantage of suppressing the itching in the state of eruption; of diminishing fever during suppuration (the temperature will not rise about 39.5° C.); of diminishing the suppuration itself, and of shortening by one-half the desquamation stage."

More recently, Dr. Kolbassenko (*Die Heilkunde*, May, 1903) reported upon the continued excellent results obtained with Ichthyol in **small-pox**, using an ointment of equal parts Ichthyol and petrolatum.

"Ichthyol has been and is now used largely in Russia in the treatment of **small-pox**. A 12- to 20-per cent. ointment with petrolatum is applied over the whole surface of the patient, and the latter from the first day begins to feel better; the temperature is lowered, the pustules begin to dry up, and the course of the malady is shortened. After the cure, no marks whatever remain on the face or other parts of the body."—(Dr. M. Kamneff, City Physician of Melenki, Russia; in *Therap. Monatsh.*, Dec., 1900, p. 682).



"More gratifying is the effect of Ichthyol when applied to the extensive deep cicatrices of the face, as often seen after small-pox and acne."—(Dr. J. Schmidt, of Berlin; in *Therap. Gaz.*, 1886, p. 374).

Dr. Walter Gripper, of Wallington, England, reports gratifying results in applying a solution of this agent to the inflamed tissue about a vaccination point where the most rigid precautions to avoid inflammatory action had been taken. He says:

"I have always found painting around and even over the vesicles with a thirty- to fifty-per cent. solution of Ichthyol in water reduces pain and irritation at once. It will be found a most useful application, even in ordinary cases, with or without a pad of antiseptic wool or gauze. All hot or moist applications are to be strictly avoided."—*Brit. Med. Journ.*, Vol. I of 1897, p. 443. (*Ibid.*, p. 450).

Dr. Hoerschel Mann, of St. Petersburg, Russia, recommends the application of Ichthyol (10 parts) and lanum (80 parts) to shorten the course of the cutaneous manifestations of **small-pox** and prevent the pitting.—*Gaz. hebdom. de Méd. et de Chir.*, Vol. III, N. S., p. 1235. (*Ibid.*, 1899, p. 671).

"The daily application of a strong Ichthyol ointment or Ichthyol collodion can be recommended for extensive and deep scars of the face, such as frequently remain after small-pox."—(Dr. P. G. Unna, in *Dermat. Studien*, Hamburg, 1886).

"Ichthyol diminishes the itching consequent on the appearance of the papules and pustules. The purulence is visibly and promptly suppressed. The stage of purulence and of sloughing-off is shortened by three to four days. No material inflammation of the subcutaneous cellular tissue occurs."—(Dr. Moritz Cohn, in *Wien. klin. Rund.*, 1889, p. 225).

Dr. R. Pellegrini (*Terapia moderna*, 1891) reports having employed Ichthyol with good results as a topical application in the pustular stage of **variola**. Three-, five-, and ten-per cent. solutions were applied two to four times a day, by means of a brush, to the pustules and adjacent skin. This treatment is said to have hastened the drying of the pustules, checked extensive suppuration, and prevented pitting.

Dr. Strisover relates his experience in the use of Ichthyol in **small-pox** (*Vratsch.*, Vol. XIX, p. 235) thus:

"On trying it upon a severe case of **variola**, one of the most remarkable features was that the itching, which had so far resisted all possible treatment, entirely disappeared after the first or second application. In two other severe cases, the temperature became normal on the second day of the treatment, the itching disappeared completely, appetite and sleep returned, and on the eighth day the patients were convalescent."

Dr. W. A. Lawrow (*Deut. Med.-Ztg.*, 1905, No. 41) states that he had occasion to apply Ichthyol to an eighteen- to

twenty-year old patient suffering from **small-pox**, and that, to his surprise, the disease ran its course without any rise of temperature or itching.

### Formulas for Variola

Ichthyol.....	30 min.	Ichthyol.....	1 fl.oz.
Boric Acid.....	1 dr.	Lanum.....	5 oz.
Rose-water.....	6 fl.oz.	Cold-cream.....	4 oz.
Use freely as wash every few hours. (For <i>conjunctivitis</i> ).		Anoint entire body once or twice daily, rubbing in well. (For <i>preventing pitting</i> ).	

### Whooping-Cough (Pertussis)

L. Maestro reports (*Med. Week*, 1896, IV) his experience with Ichthyol in the treatment of **whooping-cough** at Prof. Cervesato's clinic in Padua. His results have been extremely encouraging. The Ichthyol was administered in the form of pills in progressively increasing doses, beginning, according to the age of the patient, with from 0.06–0.2 Cc. (1 to 3 min.) daily. The dose was then rapidly pushed to 0.6–1 Cc. (10–15 min.) in the twenty-four hours. Sometimes the internal administration of Ichthyol was associated with inhalations of a 3-per cent. glycerin solution of the same substance.

In the eight cases of whooping-cough in which this treatment was resorted to, all the morbid symptoms rapidly subsided, and recovery was obtained within a time varying according to the gravity of each case, but always comparatively short. The Ichthyol treatment was invariably well borne by the little patients. There was no untoward action on the kidneys in any case, and the influence on the general condition was very favorable. Dr. M. concludes from these observations that Ichthyol must be considered as one of the most efficacious remedies in whooping-cough, the spasmodic attacks rapidly decreasing in number and intensity, and the duration of the affection being shortened in a marked degree.—(*Amer. Med.-Surg. Bull.*, Vol. XI, p. 100).

Dr. Souther reports the successful treatment of his four children with Ichthyol in grain doses, given at first every

four hours. The ages of the children ranged from two years and six months to eight years. In two days the dose was increased to 2 min., then to 3 min. and 4 min., every four hours. He says:

"At the commencement of treatment the paroxysmal cough occurred about twenty-five to thirty times in the twenty-four hours; after four days of the Ichthyol the number of attacks was reduced to about six in the twenty-four hours, and at the end of the week from two to three." All the other symptoms, too, improved correspondingly. "I was so pleased with the result," the author continues, "that I tried it in ten others with almost uniformly favorable results. The only failures I had was when I employed too small a dose. I saw no unpleasant effect in any case from the administration of Ichthyol, the children taking it well. I shall be very glad to learn the opinions of others who may have tried Ichthyol in *pertussis*."—(*Med. Times*, Vol. XXVII, p. 373).

Really brilliant results have been obtained by Dr. Naamé (*Bull. gen. de Therap.*, Feb. 15, 1911) from the use of Ichthyol in whooping-cough. At first, a 2-per cent. solution was used; later, the strength was increased to 10 per cent. with the result that not a single failure was recorded. The author's favorite formula is as follows:

Ichthyol .....	10.0 Gm.
Glycerin .....	20.0 Gm.
Comp. Spt. Melissa .....	2.0 Gm.
Spt. Peppermint (10%) .....	2.0 Gm.
Ess. Bitter Almond .....	3 drops
Syrup .....	to make 100.0 Gm.

The dose varies with the age of the patient and the severity and duration of the disease. The drug is not toxic, and in case of overdose only gives rise to a slight diarrhea.

In a general way the following are the proper doses per day:

Up to 1 year .....	4 to 6	teaspoonfuls
Up to 2 years .....	3 to 4	dessertspoonfuls
From 3 to 4 years .....	4 to 5	dessertspoonfuls
Above 5 years .....	4 to 5	tablespoonfuls

If the attack is rebellious or of long duration, or if complications such as capillary bronchitis or bronchopneumonia are present, the dose may be doubled. The efficacy of the drug depends upon the time during the disease when it is given: thus if administered at the onset, it may be aborted in 2 or 3 days, while later it will check

the spasms and vomiting and convert the disease into a simple bronchitis. More energetic treatment, of at least 10 days' duration, will be required where the disease has lasted some time, but even here the results are good.

Based upon a large experience, the author is convinced that Ichthyol exerts an antianaphylactic action, that it checks the spasms and the vomiting and restores the appetite and improves the general condition like cod-liver oil. The drug may be continued some time after the cure for its general tonic effects.

### Formula for Whooping-Cough

Ichthyol . . . . .	1 fl.dr.
Peppermint Water . . . . .	9 fl.dr.
At first, ten, then twenty, thirty and forty minims every four hours.	

## Ichthyol in Minor Surgery

The antiseptic qualities manifested by Ichthyol when used in dermatology naturally led to its trial in minor surgery. In **superficial lesions, abrasions, excoriations, ulcers, burns, frost-bites, stings** and the like, it was quite sure to be tried by those who had found it beneficial in inflammatory conditions of the skin. Judging from the reports, the anticipations have been realized, and its power to relieve pain has made its use particularly gratifying in many cases, as the statements of a host of practitioners will show.

### Abscesses

Dr. P. G. Unna, of Hamburg, refers to the desiccant and astringent action of Ichthyol as of great benefit to the surgeon. He says (*Dermat. Studien*, Hamburg, 1886):

"I have made use of this property of the drug to bring about union in abscesses, atheromatous cavities, hydroceles, etc. If the cavities contain pus, they must first be carefully washed out with a solution of one of the ordinary antiseptics. In this respect Ichthyol has only to compete with tincture of iodine, to which it certainly is preferable on account of being absolutely harmless. Furthermore, injections of undiluted tincture of iodine occasion violent, persisting pain; while Ichthyol produces but a slight and very transient pain."

### Adenitis

Prof. Eugene Fuller, in his work on *Diseases of the Genito-Urinary System* (1900, p. 135), in treating of operation for **inguinal adenitis**, states as follows:

"If healing progresses slowly, the granulations may often be stimulated by Ichthyol combined with blue ointment. If the case progresses as it ought, evidences of outstanding inflammation should disappear as well as lymphatic hypertrophies, and the cavity should gradually fill up with solid granulations."

### Formula for Adenitis

Ichthyol . . . . .	2 fl.dr.
Lead Iodide . . . . .	1 dr.
Vanum . . . . .	4 dr.
ozoinated Lard . . . . .	4 dr.
Rub a small piece into swelling thrice daily.	

## Anthrax

"Dr. J. Félix, surgeon to the hospitals of Brussels, praises the good effects in **anthrax** of the following medication: Thrice a day he applied to the tumor a thick layer of the following ointment: Ichthyol 45 minims, and camphorated cerate half an ounce. He covers the whole with antiseptic cotton, and on the following day introduces into all the small white points of suppuration the tip of a pencil of silver nitrate. The Ichthyol rapidly lessens the inflammation and pain, favors the elimination of the core, and hastens cicatrization."—(*Wood's Medical and Surgical Monographs*, Vol. IX, p. 124).

Dr. Joffe (*Klin.-therap. Woch.*, VIII, No. 19, p. 638) recommends Ichthyol in **anthrax**. After removing the scab which covers the malignant pustule, the ulcer is touched with the thermo-cautery and covered with compresses saturated with a mixture of 1 part of Ichthyol to 3 parts of glycerin. The compresses are renewed once or twice a day. In two to three days the whole malignant process is at an end; only the crust is left, which soon falls off.

## Formulas for Anthrax

Ichthyol.....	2 fl.dr.	Ichthyol.....	1 fl.oz.
Camphor Cerate.....	2 oz.	Water.....	1 fl.oz.
Apply thrice daily; cover with sterilized cotton. Touch suppurative points (white foci) with silver nitrate; then continue ointment.		Inject into pustule, and apply freely externally, preferably after incision.	

Ichthyol.....	2 fl. dr.
Peppermint Water.....	4 fl. dr.
Twenty drops three times daily, after meals, in water.	

## Bites and Stings of Insects

The *Internat. Med. Annual* (1898, p. 329) reports thus:

"Dr. W. Ottinger greatly prefers Ichthyol to ammonia to relieve the pain, burning, itching, and swelling of **insect bites or stings**. He paints pure Ichthyol over the wounds; or a paste of Ichthyol and lanum or petrolatum in equal parts may be used. Ichthyol gutta-percha plaster (10-per cent.) can be recommended. Pure Ichthyol or the Ichthyol ointment should be reserved for the severe cases. The author has seen good results produced when the whole of the arm was swollen and painful. In such a case the arm can be painted with Ichthyol, then covered with gutta-percha tissue, and the whole enveloped in ice."

### Formulas for Insect Bites and Stings

Ichthyol .....	Ichthyol.....	4 fl. dr.
Lanum .....	Ammonia Water.....	4 fl. dr.
Petrolatum.....equal parts	Camphor Water.....	4 fl. oz.
	Apply freely.	

### Burns

Dr. Unna (*Dermat. Studien*, Hamburg, 1886) says:

"Ichthyol has proved very useful in **burns**. It noticeably lessens the pain, paralyzes the effect, and, if immediately applied, prevents the formation of blisters. I have frequently observed that persons who expose themselves considerably to heat radiation, can successfully combat the skin affections resulting therefrom by anointing the parts beforehand with a 25-per cent. ointment (2 fl. dr.: 1 oz.), or with a paste composed of 1 part Ichthyol and 5 parts dextrin."

Dr. J. Schmidt, of Berlin, Germany, writes thus (*Therap. Gaz.*, Vol. II, p. 452):

"The value of Ichthyol in **burns** claims the attention of every practitioner. The principal features of this employment are the avoidance of vesication (provided the remedy is applied at once) and the alleviation of pain. In burns of the first degree all symptoms can be removed in a very short time by an immediate application. If burns of a more intense form are partially treated with Ichthyol it can be readily seen that the ichthyolized portions present no vesication, while the unmedicated places present the typical appearance of burns of the second degree. The Ichthyol application either removes all morbid symptoms or reduces the burn of the second degree to one of the first degree; pain invariably disappears soon after the application of the drug. Numerous authoritative observers agreeing in the unrivalled value of Ichthyol in burns, it is fair to assume that this remedy will replace all other therapeutic measures of less efficacy."

Dr. Gould, in his *Amer. Year-Book of Med. and Surg.* (1897, p. 416), writes as follows:

"Leistikow is a strong advocate of the use of Ichthyol in **burns**. In burns of the first degree he uses a mixture of 5 parts of zinc oxide, 10 parts of magnesium carbonate, and from 1 to 2 parts of Ichthyol. In burns of the second degree he applies the following composition: 5 parts of zinc oxide, 10 of prepared chalk, 10 of starch, 10 of linseed oil, 10 of lime-water, and from 1 to 3 of Ichthyol. This mixture is applied once daily. When there is a great deal of inflammation in the burn these two preparations can be used at the same time, the burn bring first dusted with the powder, and the paste being laid on over this."

The same journal (1899, p. 481), abstracting from *Aerztl. Rundschau* (1899, No. 5), says:

"Dr. Schütze, of Bad-Kösen, writes of the wonderful efficacy of Ichthyol in severe burns, and reports having treated a case in which the entire hand had been burned by molten lead. Sterilized gauze saturated with a 50-per cent. Ichthyol solution was applied, each finger being separately bound, and the whole hand finally enveloped. The pain had been excruciating, but rapidly subsided, and in fact disappeared so that the patient scarcely believed his hand to be hurt, and could move his fingers within the loose cotton bandage covering the hand without feeling the slightest pain. The bandage was kept constantly moist, and after three days extensive granulations were visible. On removing the dressing and attempting to wash the hand with lukewarm water, severe pains were felt, but they were immediately relieved on applying a new dressing with the Ichthyol solution. In less than three weeks the patient was cured and able to resume his ordinary occupation, with nothing to show but a slight redness of the skin to mark the severity of the burn. The author has, since this experience, always used Ichthyol solutions of from 50 to 80 per cent. in all cases of burns, and recommends the use of this remedy as affording the most satisfactory results in all cases."

The same periodical, on page 481 of its volume for 1899, in an abstract from the *Aerzil. Rundschau*, states as follows:

"Ichthyol has been used with remarkable success by Dr. Fr. E. Mueller, of Lubeck, in cases of severe burns. The Ichthyol was applied pure in a rather thick layer, talcum powder being then liberally sprinkled on it, and plenty of cotton batting applied, the whole being kept in place by means of a strip of soft material. The burning sensation experienced during the application of the pure Ichthyol disappears in from ten to thirty minutes according to the severity of the burns, and is followed by a feeling of relief in which not the least sensation of soreness is felt in the burned part. The bandage should not be renewed. After three to five days it is removed, and the burned part is then found to be entirely healed. This ideal result is invariably secured in burns of the first or second grade, if the Ichthyol application has been made when the vesicles may still be completely emptied of their fluid contents on incision. If the contents of large vesicles are already gelatinous, or if the vesicles are cracked, it is necessary to remove the detritus before applying the Ichthyol. Disinfection is entirely unnecessary. The pain disappears completely even in the case of most severe burns. Should the dressing have become wet through from excessive secretion on the second day, the pain reappears at once; in this case the dressing is removed, and a new application of Ichthyol with fresh cotton is made. Since the renewal is, however, extremely painful, the author, in order to avoid the necessity for a change in severe cases, where there is a probability of the secretion being superabundant, employs Ichthyol-vasogen in these cases, as such dressings may be readily renewed, if necessary, twice daily. The author, in conclusion, cites the clinical history of a case illustrative of the wonderfully good results secured."

"In extensive burns there is nothing better in the early stages than a 5-per cent. mixture of Ichthyol and petrolatum," says Stuart McGuire, of Richmond, Va., (*Charlotte Med. Jour.*, April, 1905). "In sluggish granulations, especially of a tuberculous character, good will result from the application of a combination of 1 per cent. carbolic acid, 5 per cent. balsam peru, and 94 per cent. castor oil."

"Ichthyol varnish forms an excellent dressing for burns of the first and second degree, especially if applied very early," says Dr. Hermann G. Klotz



(*Therap. Gaz.*, Feb. 15, 1910). "In the milder grades, so common in everyday life, Ichthyol will soon remove the pain and prevent the process from going any further. Even in more severe and extensive burns the prompt use of Ichthyol may prevent blistering and convert the symptoms of the second degree into those of the first degree, so that finally only a horny scab will be thrown off. A patient in whose palm a box of matches had caught fire had the affected part thickly painted with Ichthyol and covered with cotton and a bandage. The patient kept at his work, and when the dressing was removed after several days nothing could be seen except detachment of the thickened epidermis. Ichthyol is also a prompt and convenient drug in burns due to the action of the sun or other light; it can be applied to the face and hands in the evening, and can be easily removed in the morning. The earlier the application here the better. Ichthyol is not to be recommended in burns of the third degree. It is excellent, however, in frost-bite, particularly of mild grade, about the fingers, feet, nose, and ears."

Dr. Hugo Goldman (*Wein. Med. Presse*, No. 9, 1903) reports that in his capacity as physician to metallurgical works, he has had occasion to often treat very severe burns, and in treating such cases he has found nothing to equal Ichthyol. He declares that Ichthyol answers every requirement demanded of a remedy in such cases, being not only antiseptic, but because of its vasoconstrictor properties, analgesic as well. In support of his statements he cites the histories of two very severe cases which fully prove the value of Ichthyol applications in burns. He, however, very earnestly recommends that care be taken to employ only the Ichthyol as made by the Ichthyol Co., as there are many worthless imitations on the market.

Dr. Van Zandt (*Journ. Amer. Med. Assn.*, Sept. 23, 1905, p. 939) states that for burns of any degree he prefers as a dressing an Ichthyol mixture made as follows:

Alum.....	30 parts
Carbolic Acid.....	4 parts
Ichthyol.....	10 parts
Liquid Petrolatum.....	to make 180 parts

In the **acute erythema** of X-ray treatment, Dr. C. L. Leonard (*Journ. Amer. Med. Assn.*, May 6, 1905) employs a stearate of zinc powder with 10 per cent. Ichthyol, which he thinks acts as a prophylactic against severe burns. This should not be confused with stearate of zinc ointment, which may do harm.

## Formulas for Burns

Ichthyol.....4 to 10 fl.dr.  
Water.....to make 5 fl.oz.

Envelop part with soft gauze bandage kept constantly moist with solution.

Ichthyol.....1 fl.oz.  
Oil Eucalyptus.....10 min.

Paint with camel's hair brush.

(In burns of the *first degree*; also in burns generally, if applied immediately after occurrence.)

Ichthyol.....3 fl.dr.  
Ext. Opium.....5 grn.  
Petrolatum.....3 dr.  
Lanum.....3 dr.

Apply on linen or lint. (If burn is very extensive, diminish or omit the opium.)

(In burns *without* blistering.)

Ichthyol.....4 fl.dr.  
Zinc Oxide Merck.....4 dr.  
Petrolatum.....4 dr.

Apply.

## Carbuncle

Dr. S. N. Rosenbaum (*N. Y. Med. Jour.*, Vol. LXVII, p. 825) recommends the following method for treating carbuncles:

"Fold a piece of aseptic gauze until it forms a thickness of six to eight layers, the surface area to be somewhat larger than the carbuncle to be covered. The gauze is first thoroughly saturated with Thiersch's solution, then covered with a layer of a 10-per cent. Ichthyol ointment, and then applied to the carbuncle. A piece of rubber protective large enough to overlap the gauze is now placed on the latter to keep in the moisture. A layer of cotton is placed on the protective, and then the bandage is applied and allowed to stay on for two days. When the patient returns to be rebanded and to have the dressings renewed, the cores are found to have separated from their respective walls, and at the next redressing, which is again in two days, they are found entirely separated, and can be easily and painlessly removed. At the next visit granulation has passed the primary stage, and healing quickly results, leaving an almost invisible scar. The only constitutional treatment necessary is to give cathartics, like fluid extract of cascara sagrada or castor-oil; and in individual anemic or cachectic cases, compound syrup of the hypophosphites. For this simple but very effective treatment the following advantages are claimed: (1) Painlessness (a great factor with many patients); (2) quickness of healing, more so than with other methods; (3) no scar or cicatrix remaining—important when carbuncles are in visible parts."

## Chilblains

Dr. W. G. MacPherson, of the Army Medical Staff, says (*Brit. Med. Jour.*, 1891, Feb. 28) that Ichthyol ointment (10-per cent., with lanum or petrolatum as a base) relieves the excessive irritation in **chilblains** completely and rapidly, and that its continued use will cure the condition.

The *Annual of the Univ. Med. Sciences* (1890, Vol. IV, p. A 55) states:

"Kopp obtained very good results with Ichthyol in frosted fingers and chilblains, a 20-per cent. Ichthyol lanum ointment having proved useful."

### Formulas for Chilblains

Ichthyol..... 1 fl.dr.  
Lanum..... 1 oz.

Use daily. Before applying, wash parts with lukewarm water.

Ichthyol..... 5 fl.dr.  
Chloroform..... 90 min.  
Lanum..... 3 dr.

If skin is broken, omit chloroform and use zinc ointment instead of lanum.

Ichthyol..... 1 fl.dr.  
Resorcin Merck..... 1 dr.  
Tannic Acid Merck..... 1 dr.  
Water..... 5 fl.dr.

Paint on every morning and night. Shake the bottle.

Ichthyol..... 1 fl.dr.  
Flexible Collodion..... 10 fl.dr.

Rub off with spirit of camphor, then apply this paint.

Ichthyol..... 1 fl.dr.  
Camphorated Oil..... 1 fl.dr.  
Lanum..... 4 dr.

Anoint night and morning, and wrap in cotton.

Ichthyol..... 1 fl.dr.  
Balsam Peru..... 1 fl.dr.  
Lanum..... 2 dr.

Wash parts, and apply ointment several times daily.

Ichthyol..... 4 fl.dr.  
Oil Turpentine..... 4 fl.dr.

Wash affected parts with soap and water, apply liniment, and wrap in cotton.

Ichthyol..... 3 grn.  
Resorcin..... 3 grn.  
Petrolatum..... 15 grn.  
Lanum..... 15 grn.

Spread on thickly and cover with a bandage for 24 hours.

### Contusions

Prof. von Nussbaum, of Munich, reports among other things the following:

"In a case of painful 'white swelling' of the knee, with pronounced parasyovitis, local heat, and pain, I ordered Ichthyol ointment to be painted on, and a dressing with 10-per cent. salicylated cotton to be applied, after all previous treatment had proved futile. The following day the patient had no pain; he had slept the whole night without using any narcotic; and the knee looked better. On continuing the treatment, the patient gradually improved, and never again felt the pain."

The London *Lancet* (1891, Sept. 26) reports thus:

"Dr. Cranstoun Charles applied 30-per cent. alcohol-ether solutions of Ichthyol, twice daily, to severe contusions of the face and shoulders. The result was most satisfactory, pain rapidly disappearing, as well as the swelling.

Dr. Ackermann, of Weimar, Thuringia, writes as follows (*Corresp.-bl. des allg. aerztl. Ver.*, 1885, No. 8):

"The anodyne property of Ichthyol induced me to use the remedy in a case of **contusion of the ankle**. After shampooing the part with Ichthyol ointment (20-per cent.), I dressed it with cotton moistened with Ichthyol. In a few hours the intense pain had disappeared, two days later the patient had entirely recovered the use of the foot."

Dr. P. Schmitz, of Leonore, Ill., states the following (*Amer. Med.-Surg. Bull.*, 1895, Vol. VIII, p. 919):

"In **contusions** and **sprains** I either use the liniment (Ichthyol in alcohol and ether), or equal parts of Ichthyol and glycerin, with good results; it relieves the pain and reduces the swelling quickly."

Dr. Weissmann (*Reichs-Medicinal Anz.*, No. 6, 908) says that during 15 years (1893-1906) he treated 437 cases with Ichthyol, the majority being cases of sprains and contusions. At times the Ichthyol was applied pure, at times as a 20-40-per cent. ointment with petrolatum and lanum. He obtained good results in all cases, both the analgesic and resorptive effects of the Ichthyol being very much in evidence.

### Formulas for Contusions

Ichthyol.....	4 fl.dr.	Ichthyol.....	1 fl.dr.
Oil Bay.....	20 min.	Water.....	9 fl.dr.
Tinct. Capsicum.....	10 min.	Bandage firmly, keep bandage constantly moist with solution, and cover with gutta-percha tissue.	
Apply carefully on bruised spots around eye. Keep out of eye.			
(In "black-eye.")			

Ichthyol.....	2 fl.dr.
Alcohol.....	4 fl.dr.
Ether.....	4 fl.dr.
Apply several times daily.	

### Fissures

Dr. Squibb, of Brooklyn, states (*Trans. N. Y. State Med. Assoc.*, 1899, p. 670) that Dr. L. Conitzer, of Hamburg, Germany, gives his results in the treatment of **anal fissure** with Ichthyol, thus:

"Preliminary local anesthesia is obtained with cocaine and then the Ichthyol is applied by any suitable means. After the first application it is not usually necessary to anesthetize with cocaine. Complete relief is obtained in something short of a week or two as the case may be."—(*Munch. med. Wochens.*, Vol. XLVI, p. 80).

The same author (*Trans. N. Y. State Med. Assoc.*, 1893, p. 352) also states as follows:

"The marked success obtained by Dr. H. W. Freund, of Strasburg, Germany, with this agent in the treatment of fissured nipples, led Dr. A. Van der Willigen, of Rotterdam, Holland, to employ it in fissure of the anus. One female patient, who had tried all the forms of treatment except the surgical one, was reported cured in one week by painting the part with pure Ichthyol; another patient only required ten days to restore him to the normal condition; while a third case healed up in two weeks, after receiving no relief from a surgical operation. There were no relapses in any of his cases."

The *Internat. Med. Annual* (1898, p. 112) contains the following statements concerning anal fissure:

"M. Jules Cheron employed cocaine and Ichthyol in it. After obtaining local anesthesia by means of a tampon of absorbent cotton saturated with 1-per cent. solution of cocaine hydrochloride, he touches the fissure with pure Ichthyol, and repeats this process for several days. After the fourth or fifth application the cocaine tampon is introduced as far as the internal sphincter, the anus is slightly dilated with a Nélaton dilator, and the fissure can then be thoroughly touched with Ichthyol. For recent fissures ten applications, and for old fissures rarely more than twenty applications, are necessary."

Dr. M. Katzenstein (*Ther. der Gegenw.*, Dec., 1903) outlines the following medicinal treatment for anal fissure, as one that has proved very satisfactory: He anesthetizes the nerve ends in the fissure by applying cocaine, and then overcomes the spasmodic contraction of the sphincter with belladonna, disinfecting the parts by coating them with pure Ichthyol. A piece of cotton is twisted into a cord about the size of a knitting-needle, and dipped in a solution having the following composition:

Extract Belladonna.....	8 grn.
Cocaine Hydrochloride.....	1 grn.
Ichthyol.....	1½ dr.

The cotton is then inserted into the rectum along the wall opposite the fissure, where it is left until expelled spontaneously. According to the author, this application repeated twice a day will surely effect a cure of the fissure in a week, or, at most, two weeks.

Dr. Mummery (*Clin. Jour.*, Mch. 8, 1905) recommends that in cases of anal fissure, when the fissure is of recent origin, the treatment should be tried of painting the fissure with a little pure Ichthyol on the end of a probe, and with

the aid of a suitable fenestrated speculum. This is repeated every few days for five or six applications. The pain generally disappears after the first application, and the healing is often complete in a week or ten days.

In various inflamed conditions of the breast, such as **fissure**, **abscess**, etc., Ichthyol has been highly recommended. The *Therap. Gazette* (Third Series, Vol. IX, p. 203) states as follows:

"Behren recommends an ointment of Ichthyol 4, wool-fat 5, glycerin 5, and olive oil 1, to be applied to **fissured breasts**; and adds that the intolerable pain of nursing is immediately diminished, and the infant continues to nurse with impunity, since the ointment is not irritating, and is easily removed by washing with simple water."

Dr. P. Schmitz, of Leonore, Ill., reports his experience in the use of Ichthyol in **mastitis** as follows (*Amer. Med.-Surg. Bull.*, 1895, p. 919):

"The first case was that of a woman during lactation, with inflammation of the left breast. She was suffering excruciating pains in the breast and nipple for three or four days, the gland being swollen and very red. I prescribed a mixture of equal parts of Ichthyol and water, and ordered this to be gently rubbed in two or three times daily; the breast then to be covered with cotton and flannel. This constituted the whole treatment. The patient suffered very little after the applications, and in two days the breast opened, discharging considerable pus. The applications were continued, and in a short time she recovered completely.

"In another case of **mastitis**, where inflammation had begun two days previous to my being called, I pursued a similar treatment. The inflammation terminated in resolution, and in three days the patient was well. I tried it in one case to check the secretion of milk, and with good results, after applications of belladonna and camphorated oil had failed."

Dr. H. Naegeli-Akerblom (*Sem. méd.*, Vol. XVIII, p. 2) reports thus:

"A very efficacious treatment of **non-suppurating mastitis** consists in painting the affected region with a mixture of mucilage of acacia with 30 per cent. of Ichthyol. The application of this mixture, which dries rapidly and forms an adherent pellicle readily removed by warm water, when made sufficiently early, prevents suppuration, or, at least, considerably diminishes the extent of the mammary abscess."

*Allbright's Office Practitioner*, May, 1906, states that in **fissured nipples**, accompanied by induration, an ointment containing 1 part of Ichthyol to 40 of lanum will give prompt relief; it must be carefully wiped off the nipple before each

nursing as the "tarry" odor will frequently cause the child to refuse the breast.

### Formulas for Fissures

#### Anus

Once a day a brush dipped in Ichthiol is introduced per anum and expressed. The application is not painful, and even in those cases in which the most varied remedies have been tried in vain, healing has been reported within one to two weeks.

Ichthiol.....	20 min.
Acetanilide.....	18 grn.
Ext. Opium.....	6 grn.
Oil Theobroma.....	2 dr.

Divide into six suppositories.

Insert one night and morning, after using soap - and - water enema to cleanse rectum.

#### Nipples

Ichthiol.....	1 fl.dr.
Glycerin.....	1 fl.oz.

Externally.

Ichthiol.....	2 fl.dr.
Lanum.....	15 dr.
Glycerin.....	3 fl.dr.

Apply freely after nursing, and wash off before again nursing.

Ichthiol.....	4 fl.dr.
Mercurial Ointment.....	4 dr.
Belladonna Ointment.....	1 oz.
Cerate Lead Subacetate...	1 oz.

Apply to breast freely three times daily, and apply tight bandage. Give saline purge in beginning.

Ichthiol.....	3 fl.dr.
Zinc Oxide Ointment.....	1 oz.
Belladonna Ointment.....	1 oz.
Use as preceding.	

Ichthiol.....	4 fl.dr.
Lanum.....	5 dr.
Glycerin.....	5 fl.dr.
Olive Oil.....	1 fl.dr.
Ointment.	

Ichthiol.....	1 fl.dr.
Oil Eucalyptus.....	5 min.
Lanum.....	4 dr.

Apply after nursing, and wash off before again nursing.

Ichthiol.....	1 fl.dr.
Olive Oil.....	7 fl.dr.

Apply three times daily, washing with soap and water before each application.

### Frost-bite

A. Hecht (*Therapeut. Monatshefte*) employs the following process in the treatment of **frozen hands**: The hands or feet are bathed once to thrice daily in water as hot as can be borne, from 10 to 15 minutes each time, then, after carefully drying off, when there are no broken ulcers, washed in alcohol. In the evening the extremities are thoroughly rubbed with an ointment composed of

Ichthiol.....	1 to 5 parts
Resorcinol.....	1 to 3 parts
Lanum.....	25 parts
Olive Oil.....	10 parts
Water.....	to make 50 parts

Considerable time should be devoted to this rubbing, which should terminate in the application of a layer of the same ointment and a bandage.

In light cases this treatment is all sufficient. The time occupied between the first application until the complete healing of the chilblain and the surrounding reddening and swelling will vary according to circumstances. Small open places may be covered in the daytime with some indifferent application after having been first filled with some dusting powder, as, for instance, bismuth subnitrate. Over night, however, it is best to cover them, after carefully cleaning them with the above mentioned ointment, also rubbing it in well.

Dr. W. Oakley Hermance says (*Amer. Med.-Surg. Bull.*, 1895, p. 424):

"During the very cold weather, the house staff of the Polyclinic Hospital, of Philadelphia, had an opportunity to test the different remedial measures that have been proposed for the relief of frost-bite. Of the different methods employed, the application of Ichthyol ointment (33 $\frac{1}{3}$  per cent.) seems to have given the best results. It almost instantly gave relief from pain, and promptly subdued the inflammation. Eight of the eleven cases treated therewith were discharged cured after placing a second dressing of Ichthyol, so rapid was its action."

The vaso-constrictor and analgesic effects of Ichthyol led Dr. K. Zingler (*Wien. Klin. Rundschau*, No. 11, 1909) to utilize the remedy in frost-bite. It was his idea that a more rapid cure was to be obtained by softening the epidermis and relieving the pain, and to this end he had been in the habit of employing ointment bandages preceded by hot baths, but without any satisfactory results. In fact, he believed that the ointment masses adhering in the cracks collected dust and dirt, and gave rise to infections, and hence he sought to utilize this property of adhering by employing a disinfectant. For this purpose he found Ichthyol best adapted because of its entire freedom from irritative action, as well as because of its vaso-constricting and analgesic properties. He found the following ointment most suitable for use:

Ichthyol .....	3 gm.
Resorcin .....	3 gm.
Petrolatum .....	15 gm.
Lanum .....	15 gm.



The ointment was spread on thickly, and covered with a linen bandage for 24 hours. The results were very prompt. On the following day every trace of irritation was gone, the pain had ceased, and the wound, where such existed, exhibited a pronounced tendency to granulation. After another 24 hours, the skin of the diseased part began to peel off, and in 3 to 4 days the part was fully healed. In no instance was any wound infection observed, as had been previously the case.

Dr. Lorenz (*Therap. Gaz.*, 1887, p. 693) states that in frost-bites a one-per cent. salve of Ichthyol and petrolatum speedily relieves the burning pain and furthurs cicatrization. In severe burns a water solution, from two to ten per cent., is useful in allaying pain.

The *Annual of the Univ. Med. Sciences* (1890, Vol. IV, p. A 55) reports that in frost-bites Kopp has obtained very good results with Ichthyol.

### Formulas for Frost-bite

Ichthyol.....	2 fl.dr.	Ichthyol.....	1 to 2 fl.dr.
Powd. Camphor.....	30 grn.	Lead Ointment.....	2 dr.
Lead Ointment.....	4 dr.	Apply.	
Apply freely once or twice daily; cover with cotton-wool.			
Ichthyol.....	1 fl.dr.	Ichthyol.....	1 fl.dr.
Olive Oil.....	7 fl.dr.	Oil Turpentine.....	15 min.
Paint.		Lead Ointment (Hebra)....	6 dr.
Apply once or twice daily; cover with cotton-wool.			
Ichthyol.....	1 fl.dr.	Ichthyol.....	2 fl.dr.
Camphorated Oil.....	4 fl.dr.	Oil Rose Geranium.....	3 min.
Rub in once or twice daily; cover with cotton-wool.			
Paint.			

### Furunculosis (Boils)

Dr. Chas. J. R. McLean, of London (*Brit. Med. Jour.*, 1899, Mar. 9), speaks thus of his use of Ichthyol in furunculosis:

"Here I use a strong aqueous solution (1 fl.dr. in 4 fl.dr.) applied once every two hours for three or four applications, and then once every four hours; it always reduces the base of the boil in size, and often aborts it altogether if applied early."

In an editorial in the *Therapeutic Gazette* (Vol. VIII, p. 684) the statement is made that in **furunculosis** local applications of a 50-per cent. ointment (of Ichthyol) made up with lanolin or lard give better results than any other single treatment. If this remedy is applied in the forming stages of a boil, the latter is frequently aborted.

F. Brush (*Muench. med. Woch.*, June 20, 1911) states that the customary moist dressings for **furuncles** are inconvenient to use, and often will lead to the appearance of new foci or necrosis. He proceeds as follows:

"The hairs are carefully shaved off, then the entire inflamed area is painted with pure Ichthyol. This is covered with several strips of adhesive plaster. As a rule, the pain will cease in 3 to 4 hours with this dressing and the pus will be found broken through on the following day. After cleansing with benzin, Ichthyol is again supplied as before. Where there is distinct ulceration, with profuse discharge, some gauze may be used under the plaster. The cure is rapid, recurrences are rare, and the cosmetic results are excellent."

### Formulas for Furunculosis

Ichthyol.....	1 fl.dr.	Ichthyol.....	8 fl.dr.
Lead Plaster.....	2 dr.	Petrolatum.....	3 dr.
Resin Plaster.....	2 dr.	Lanum.....	3 dr.
Apply on lint or linen.		Apply twice daily. Use also daily full alkaline baths.	
Ichthyol.....	2 fl.dr.	Ichthyol.....	1 fl.dr.
Glycerin.....	2 fl.dr.	Mercury Bichloride.....	2 grn.
Water.....	12 fl.dr.	Petrolatum.....	10 dr.
Cover with thin layer of cotton and gutta-percha, and secure by binder.		Apply twice daily.	

### Piles

Dr. L. Duncan Bulkley, of New York, refers (*Amer. Med.-Surg. Bull.*, Vol. XI, p. 216) to the use of Ichthyol in **piles** as one of the non-dermatologic uses to which he has successfully put it. He says:

"Taken in doses from five to fifteen drops, in water or capsules, after each meal, it seldom fails in giving relief to the congested capillaries of the lower rectum and anus, if the condition is not too aggravated; when, by long duration, the blood-vessels have become permanently dilated with intercellular exudation and some vascular new formation, and especially if a clot has formed in the mass, this remedy, like all others, has little effect. But in the milder and recurrent cases, where small tumors form, Ichthyol, if freely used internally, and perhaps externally, will give a relief that is most gratifying, and many patients at once resort to it on every return of this trouble."

## Formulas for Piles

*Bleeding*

Ichthyol.....	30 min.
Powd. Nutgall.....	20 grn.
Powd. Opium.....	20 grn.
Lead Acetate.....	20 grn.
Lanum.....	4 dr.
Petrolatum.....	4 dr.

Apply night and morning, on lint,  
after bathing parts with cold water.

*External*

Ichthyol.....	1 fl.dr.
Tannic Acid Merck.....	30 grn.
Ext. Opium.....	20 grn.
Belladonna Ointment.....	4 dr.
Cerate Lead Subacetate...	2 dr.

Apply freely several times daily.  
(In *painful* piles.) Useful also for  
*internal* piles with prolapse.

Ichthyol.....	45 min.
Lanum.....	to make 1 oz.

After each stool wash part, and  
anoint herewith.

*Internal*

Ichthyol.....	8 min.
Cacao Butter.....	20 to 40 grn.

Make 10 such suppositories.  
Introduce one at night.

Ichthyol.....	75 min.
Cocaine Hydrochloride	
Merck.....	15 grn.
Ergotin Merck.....	1 dr.
Mercury Chloride Merck..	45 grn.
Petrolatum.....	4 dr.
Lanum.....	4 dr.

Insert a piece as large as a small  
nut into rectum after each stool.

## Sprains

*Allbright's Office Practitioner*, May, 1906, states that the effects of a paste consisting of equal parts of Ichthyol and hydrous wool fat are almost magical, when the paste is properly rubbed in, in **acute sprains**.

Prof. Hobart A. Hare, in his work on *Practical Therapeutics* (1905, p. 278), informs us that for **acute sprains**, and for the removal of the swelling following such injuries, the influence of Ichthyol is extraordinary if it be well rubbed into the part affected.

Dr. P. Schmitz, of Leonore, Ill., says (*Amer. Med.-Surg. Bull.*, 1895, Vol. VIII, p. 919):

"In **sprains** I either use the liniment (Ichthyol in alcohol and ether), or equal parts of Ichthyol and glycerin, with good results; it relieves the pain and reduces the swelling quickly."

## Formula for Sprains

Ichthyol.....	2 fl.dr.
Ext. Belladonna.....	1 dr.
Lanum.....	2 oz.

Rub in well three times daily,

## Ichthyol in Ulcers, Etc.

Dr. Jos. Hartmann (*Corresp.-Blatt. f. schweiz. Aerzte*, 1891) reports as follows:

"In ulcers of the leg I used highly diluted solutions of Ichthyol first, then more concentrated, and finally the pure Ichthyol. The parts, when painted, were covered with wool, over that an unstarched gauze bandage, and over all the stocking. The dressing is changed as soon as any unpleasant burning pain is felt; even the first time this is done the ulcer is found to present a cleaner and healthier appearance. As the case approaches cure, the dressing can be left on much longer, up to a week or a fortnight. Rest, of course, favors the cure; but the same result is eventually attained even though the patient move about. The cases healed with a firm and lasting cicatrix, with the surrounding skin of fresh, normal appearance."

Dr. L. Duncan Bulkley (*Jour. Amer. Med. Assoc.*, 1889, No. 10) states:

"An Ichthyol lotion (10-15 min. to 1 oz.) exercises a remarkable effect upon ulcers of the leg. The affected part is kept moistened by the solution, and the dressing covered with a thickness of woolen material (not permeable), to prevent too rapid evaporation.

Dr. P. Schmitz of Leonore, Ill. (*Amer. Med.-Surg. Bull.*, 1895, Vol. VIII, p. 919), says:

"On November 19, 1892, I was called to a woman of fifty-three, having a large, bad-looking ulcer at the junction of lower and middle third of the right leg, extending from the front to the outer side. The ulcer measured two inches and a half in diameter, was fully one-quarter inch in depth, and had a grayish look. The leg, nearly up to the knee, was very red; there was considerable swelling of the leg and foot, with pain. She had injured her leg by a fall, about a year previous, and had tried to heal it with household—and patent—remedies. I made a thorough application of Ichthyol over the ulcer and swelling, covered the ulcer with gauze, wrapped the leg and foot in a thin layer of cotton, and applied a bandage. The same application and dressing were repeated once a day until November 25th. The redness had disappeared by the 22d, the ulcer looked clean and was covered with healthy granulations. On the 23rd the swelling was entirely gone; there was no pain, and the wound was doing as well as possible. After the 25th the wound was dressed every second day with iodoform gauze, cotton, and bandage, until December 5th; then every third day until December 20th, and again on the 26th. By December 31st the ulcer was perfectly healed. During all this time the woman did not rest a single day, but kept on her feet, doing all her housework.

"The following is a case of varicose ulcer: Mrs. T., aged twenty-eight, pregnant four months and a half, had a very large varicose ulcer on lower third of right leg, causing her much pain and itching. She had the same trouble during two previous pregnancies, but could not get the ulcer healed until after confinement. Ichthyol, 1 fl. dr.; iodoform, 20 grn., and petrolatum to  $\frac{1}{2}$  oz., applied morning and evening, did fairly well. I tried iodoform alone,

which caused her considerable pain. Then I ordered Ichthyol, 45 min.; salicylic acid, 10 grn.; belladonna ointment, 1 dr.; and petrolatum, 1 oz. This was applied once daily, covering with gauze, cotton, and bandage. In five weeks from the beginning of the treatment the leg was well, without having the patient confined to bed. Subsequently she wore a rubber bandage, and up to this time there had been no return of the trouble."

### Formulas for Ulcers

<i>Eczematous</i>		<i>Painful</i>	
Ichthyol.....	2 fl.dr.	Ichthyol.....	2 fl.dr.
Bism. Subgallate Merck....	1 dr.	Orthoform.....	1 dr.
Lanum.....	5 dr.	Lanum.....	1 oz.
Apply on lint.		Apply on lint.	
		<i>Uterine</i>	
Ichthyol.....	3 fl.dr.	Ichthyol.....	2 fl.dr.
Lanum.....	7 dr.	Tannoform.....	90 grn.
After washing with carbolic-acid solution, apply freely, rub in well, and bandage.		Petrolatum.....	2 dr.
		Lanum.....	1 oz.
		Apply with aid of speculum.	
<i>Rectal</i>		<i>Varicose</i>	
Ichthyol.....	1 fl.dr.	Ichthyol.....	1 fl.dr.
Iodoform.....	1 dr.	Gelatin.....	2 dr.
Ext. Opium.....	4 grn.	Zinc Oxide Merck.....	80 grn.
Oil Theobroma.....	4 dr.	Glycerin.....	2 fl.dr.
Divide into 12 suppositories.		Distilled Water.....	4 fl.dr.
Introduce one night and morning.		Heat, then paint on ulcer after previous washing with carbolic-acid water and drying well.	

## Wounds

Among the earliest references which we can find to this use of Ichthyol, is that by Dr. Lorenz (*Therap. Gaz.*, 1887, p. 693). The doctor being a surgeon-major in the German army, had ample opportunity for testing its value. He used it not only on superficial lesions, but also on deep wounds, and found its effect quick and sure. The Gazette says:

"Pain and swelling disappear after one to three inunctions, and the patients can resume their journey, when the condition of the lower limbs admits. The application of Ichthyol allows the injured part to remain undisturbed, as it need not be renewed so often as compresses. . . . Four cases are reported of serious lesions which were successfully treated. The first of these was a severe lacero-contused wound of the foot, to which Ichthyol was applied ten hours after the injury was received. Four applications were enough to secure a cure; the swelling at the point of injury subsided entirely, and a slight weakness which supervened was gone in three or four days. A second case, of

a serious wound of the hand, was relieved after six inunctions of Ichthyol. A third case was that of an injury by a kick from a horse, producing a severe injury to the knee, which was treated at first by the application of cold and by rest. The knee did not improve, but became greatly swollen and very painful. Inunctions with Ichthyol three times daily were made, and a series of measurements of the affected joint were taken. It was seen that a progressive diminution in size and sensitiveness followed."

Dr. P. Schmitz, of Leonore, Ill., writes in this strain (*Amer. Med.-Surg. Bull.*, 1895, Vol. VIII, p. 919):

"In fresh wounds I first apply pure Ichthyol, which relieves the pain quickly; after that, Ichthyol ointment is used."

Dr. P. G. Unna, of Hamburg, speaking of the siccative and astringent properties of Ichthyol says the following (*Dermat. Studien*, Hamburg, 1886):

"Ichthyol is likewise useful in open wounds, especially simply fissured wounds of the scalp. By brushing them over with undiluted Ichthyol, neither sutures nor bandages are required, and the wounds heal not only well and promptly, but also without the least pain or inflammation. In sutured wounds on the hands, arms, and many other parts of the body, painting with pure Ichthyol will produce beautiful, scarcely visible cicatrices."

## Formula for Wounds

### *Paint for superficial wounds*

Ichthyol . . . . .	30 min.
Traumaticin . . . . .	5 fl.dr.

Hold edges of wound in perfect apposition, and apply with camel's-hair brush.

## Bibliography

If the reader will glance over this bibliography and note the men who have written of the efficacy of Ichthyol in various indications, he can assure himself that they are for the most part the teachers in leading medical colleges, the writers of leading text-books of medical science, and the best-posted specialists of many nations.

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# Organic Sulphur Preparations of the Ichthyol Type\*

[Excerpts from paper by F. W. PASSMORE, Ph. D.,  
in *The Chemist and Druggist*, December 18, 1909]

**I**CHTHYOL was introduced into therapeutics by Unna more than a quarter of a century ago.

It is the sulphonation product of an oil, rich in combined sulphur, obtained by the distillation of a peculiar fossiliferous deposit at Seefeld in the Tyrol.

Other soluble organic sulphur preparations . . . have been . . . brought into commerce under various names. . . .

As these . . . are made by a similar sulphonation process from oils obtained from other bituminous minerals . . . and are more or less similar in appearance, it has been assumed that they are of like composition.

The representation of ichthyol or of any of its substitutes by a chemical formula must . . . be abandoned, and, as practically nothing is as yet known of the molecular construction of the fundamental sulphur-containing hydrocarbons or of their derivatives, analysis must necessarily at present be limited to the estimation of certain factors easily and reliably determined.

The combined sulphur is the most important constituent in these preparations, so that the total percentage of this element, as well as the proportion which is present in the "sulphidic" or non-oxidized state (*i.e.*, originally combined in the hydrocarbon oil before sulphonation) must prove a factor of primary importance in comparing the identity of the various preparations. No direct method of estimating the "sulphidic" sulphur is, however, at present known, but as the sulphur present as mineral salts (sulphates) as well as that introduced in an oxydized state by sulphonation can be easily determined, the proportion of "sulphidic" sulphur may be calculated from the difference between these results and the total sulphur contained in the preparation. . . .

From these determinations the following percentages have been calculated:

	Organic Dry Residue	Total Organic Sulphur in Organic Dry Residue	"Sulphidic" Sulphur in Organic Dry Residue
Ichthyol.....	49.73	18.66	12.51
Ichthyinat.....	46.86	14.19	6.85
Ichthosan.....	51.91	15.08	6.70
Isarol.....	51.47	15.54	7.92
Lithyol.....	39.22	12.90	4.07
Petrosulfol.....	60.43	16.66	9.11
Piscarol.....	41.42	13.44	7.27
Fossilol.....	46.16	15.60	8.67
Subitol.....	40.11	15.46	9.08

\* Reprint of this interesting article in full will be sent on request.

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